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TABLE FOR THE CONVERSION OF ENGLISH AND METRIC UNITS.

This table is based on the authority of RANKINE, and is correct to the fourth decimal place.

1 Meter = 3·2808 feet.
1 Foot = 0·3047 m.
1 Liter (vol. of 1 kilog. water) = 0·2202 gal.
1 Gallon (vol. of 10 lbs. water) = 4·541 liters.
1 Kilog. per sq. meter = 0·2048 lbs. per sq. ft.
1 Kilog. per sq. mm. = 1422·28 lbs. per sq. in.
1 Lb. per sq. in. = 703·0358 kilogs. per sq. m.
1 Gram = 15·4323 grs.
1 Grain = 0·0648 gram.
1 Kilogrameter = 7·2331 ft.-lbs.
1 Foot-pound = 0·1383 kgm.
1 Atmosphere = 14·7 lbs. per sq. in. = 10·333 kilogs. per sq. meter = 29·922 in. or 760 mm. of mercury = 33·9 ft. or 10⅓ meters water.
1 Kilogram = 2·2046 lbs. av.
1 Pound av. = 0·4536 kilog.
1 Deg. Centigrade = 5-9 deg. F.−32°.
1 Deg. Fahrenheit = 9-5 deg. C. + 32°.
1 Calorie (kilog. water raised 1° C.) = 424 kilogrameters = 3·9683 heat-units.
1 Heat-unit (lb. water raised 1° F.) = 772 ft.-lbs = 0·252 cal.

THE RICHMOND IMBROGLIO.—I.

In July last, we devoted considerable attention to the report of an Investigating Committee, appointed by the Richmond Consolidated Mining Company, of London, in which the management of the company's affairs in this country was severely criticised. The result of the meetings of the stockholders at that time, as our readers will remember, was to postpone action on the matters involved until Mr. PROBERT, the Managing Director, could prepare his reply to the charges brought against him. In the mean time that gentleman remained in power at Eureka. His reply was prepared and printed in a bulky pamphlet, so short a time before the stockholders' meeting which was to act upon it, that the members of the Investigating Committee personally assailed by it had but two days to write and print a partial rejoinder. This rejoinder contains passages which should make any honest inquirer pause, at least, before accepting as conclusive the allegations of Mr. PROBERT'S defense. But the case was evidently prejudged. The managing director's friends had complete control of the stock, and the meeting was bound to vindicate him. It was held on the 13th of November, and was commenced by the declaration of the chairman that Mr. PROBERT was completely vindicated; after which, Mr. PROBERT himself spoke for nearly three hours, and a resolution, expressing the confidence and approval of the stockholders, was passed by an almost unanimous vote. The *Mining World* gives a stenographic report of this address, but says that it "can not convey to the reader the impetuosity of the speaker's style, the variations of mood, from sarcasm on the one hand to indignation on the other, or the deep feeling which sometimes caused his frame to quiver with emotion, when, laboring under a burning sense of wrong, and thinking of all the sacrifices he has made for the company, he eloquently refuted the charges made against him."

The hasty rejoinder of a part of the committee to Mr. PROBERT'S pamphlet offered proof that the subordinate officials of the company, upon whose evidence he largely relies, had given that evidence at his dictation or through fear of him, while they privately sent to London very different statements. This is not a pleasant condition of affairs, and the revelation of it made Mr. PROBERT'S "vindication" a shade less triumphant But the chairman and the Indignant Orator together managed to throw the odium upon the "traitors" who had told two stories, and the meeting kindly ignored the somewhat important question, which of these stories was true.

We need hardly say that the kind of vindication involved in the vote of the stockholders on that occasion is worth just nothing at all. It is not by sarcastic indignation and quivering eloquence that questions of finance and metallurgy are to be settled; nor can a tribunal, which gives the defendant five months to prepare his defense, and then neither allows to the complainant for rebuttal, nor to itself for consideration, five minutes, be deemed really desirous of getting at the truth. The verdict in this case is *nil;* but the evidence is before us, and open to examination. To perform this task justly, we have waited until we could obtain and study the pamphlet of Mr. PROBERT, as well as the report of his speech.

We said last July, with reference to the charges against Mr. PROBERT:

"The committee may have stated the case somewhat too strongly; certain of the transactions which they criticise appear to us to have been simple errors of judgment; others derive their suspicious look from the suppression of facts by the Board (whether with or without the connivance of Mr. Probert, does not appear); others, again, may have been erroneously interpreted by the committee. But, after every reasonable allowance has been made, the facts remain that the managing director is, under a private agreement, which he refuses to show, the agent of the patentees of the Rozan process; that, in his capacity as managing director, he runs the refinery, at a loss to the Richmond Company, while, in his capacity as patentees' agent, he receives from the Richmond Company large sums in the way of royalty; that this double relationship was not known to the shareholders at large until the Investigating Committee brought it out; and that the other points which they criticise were also kept (intentionally or otherwise) from the knowledge of the shareholders by the Board, of which the managing director is at once a member and an employé. These facts alone, without any charges of evil intention or actually illegal action, are enough to justify the overthrow of the whole management, root and branch."

Mr. PROBERT'S defense does not weaken the force of this criticism at all. He admits the facts (except as to the losses sustained by the refinery), and asserts that the peculiar (in one place he calls it "invidious") relation which he sustains to the patentees and to the company has been advantageous to the latter. But his principal argument is, that the arrangement was known, so far as it affected the company, to the Board of Directors. The details of his own bargain with the patentees he still declines to disclose.

With regard to the numerous charges of the committee, affecting partly his personal honor, and partly his business efficiency, Mr. PROBERT first carries the war into Africa, by impugning the motives of his accusers, then answers triumphantly such points of their indictment as involve errors of fact or inference on their part, and leaves unanswered the remainder—except the metallurgical portions, to which we shall refer later. Of the charges unanswered, the most important are those which implicate Mr. PROBERT in operations in both Richmond and Eureka stock. On this head he simply claims that he had a right to buy stock with his own money, and that, as regards Richmond affairs, he always sent information to the office first. In other words, if there were "operations," some, at least, of the London officials shared in them.

But the personal aspects of this contest interest us little. We are quite willing to accept Mr. PROBERT'S declaration that the committee could not "find a dollar missing"—assuming that he means missing through dishonesty on his part. His further remark that the Richmond is "almost the only company on the other side of the Atlantic of which that can be said to-day," is as impertinent as it is false. But we must pardon something to quivering eloquence.

Having such a sure thing in the way of a vindication from charges of all kinds, it was unwise of Mr. PROBERT to go into any arguments on metallurgical subjects. The questions involved in the smelting and refining processes at Eureka were discussed in the report of Mr. A. EILERS, an entirely disinterested expert, employed by the committee. Mr. PROBERT'S argument on these points comprises, first, a puerile and ridiculous attack on Mr. EILERS personally; secondly, an array of quotations from the reports of Mr. EILERS and Mr. RAYMOND, in which he displays either gross ignorance or unscrupulous unfairness, or both; and, thirdly, a restatement of the figures from the books of the company, involving questions of book-keeping rather than metallurgy, and thoroughly vitiated by the private letters of Mr. RICKARD, the Superintendent, and Mr. MORRISON, the Secretary, which assert that the statements are "cooked."

Mr. PROBERT'S huge blunder in this part of his defense arises from ignorance. Many persons not thoroughly posted in a specialty are nevertheless able to recognize the superiority of those who are really masters of it. But there is a combination of ignorance with conceit, which inspires men to astounding folly.

Here is what Mr. PROBERT was silly enough to say to the shareholders of the Richmond Company:

"Then there is Mr. Eilers, the associate of Dr. Rossiter Raymond, who has been engaged as a literary man merely on this coast until recently, and has been employed in collecting mining statistics for Dr. Raymond's journal, and who is at present superintendent of the Germania Refining and Smelting Works at Salt Lake—a rival establishment to ours, and one which in former times used to work a good deal of the Richmond bullion, but latterly they have done no refining.

Why he should be chosen I do not know. This gentleman was certainly not the person from whom to expect an unprejudiced opinion; and I protested against his appointment as soon as I heard of it. And on another ground, there was the danger of his getting at the business secrets of the company before the question of the value of the ore removed from the disputed ground had been settled, and communicating them to his friend and chief, Dr. Raymond, who is bitterly hostile to the Richmond. (So bitterly hostile was he, that not satisfied with doing his duty as a witness on the occasion of the trial, he went and sat with the counsel and associated himself with them, prompting them with questions to ask his brother experts on our side, a thing that was unprecedented, and which called forth from one of our counsel a strong remonstrance.) In consequence of the hopes held out to them by the committee, all the Eastern refiners were expecting to get our bullion. One of them applied to Mr. Meyer for it in these terms: 'Should they'—that is, the committee—'sell their bullion, we would like to have it, and would pay high on the start, hoping to get better terms after a while.' They did get some of it, on the recommendation of the committee, and they did pay high on the start, but they dropped immediately, as I will show you presently. Mr. Eilers was, nevertheless, chosen by the committee to report on the refinery and smelting works, from the latter of which he had every thing to learn; for, gentlemen, I took some pains to ascertain whether Mr. Eilers had ever been at the head of any large establishment, so as to give him the right to be employed by those gentlemen. He is a comparatively young man, and for six years he was employed as a writer for a newspaper—Dr. Raymond's journal—and he never held any such position at the head of smelting works in the United States, and he could not have held it in Europe, because he was a very young man when he left Germany, and the only position he has been in is under Mr. Billing, who is handling, I believe, the unfortunate Flagstaff mine, which I daresay some of you know, to your sorrow, and he has been smelting this ore, and I doubt whether he can claim to have had much other experience. And still he was called in to report on works with which, for magnitude, there is nothing to compare in the United States. You might as well call in a cab-driver to report on a locomotive. * * * * Mr. Eilers had been in communication with me, and I had furnished him papers at different times, giving him information regarding our own mine and works, with a public object in view, namely, to supply the journal of Dr. Raymond with all the information I could. I had been on friendly terms with Mr. Eilers, and known him as a literary man, and respected him as such. But beyond that, I say, let the shoemaker stick to his last. He had nothing to do with mining until these gentlemen established him as an authority at the expense of the Richmond Company. * * * * The members of the committee could not have known him. He was not a man whose fame was widely spread. There were men able and competent—equal to some of our foremost men—but they did not engage them. I can find you a score like Mr. Eilers, men who have studied at Freiberg; but you know as well as I do that if a man goes to Cambridge, that does not make him senior wrangler. He has to do something more. He has to establish a reputation for learning. Mr. Eilers has not established any great reputation as a smelting expert. I have nothing against Mr. Eilers personally, nor have a word to say against his private character, but he was not a person to have called in to report on your refinery, for it requires special handling, and Mr. Eilers had never seen the system in his life any more than your committee had, who yet attempt to explain it all to you. (Laughter.)"

We join in the "laughter" of the shareholders, but we laugh at the orator, not with him. Every body who knows Mr. EILERS knows him to be at this moment, and to have been for years, a metallurgical authority, recognized both in this country and in Europe. He was never employed as correspondent for "Dr. Raymond's journal;" he had managed mines and smelting works with distinguished ability before he took charge of the Germania works in Utah; he was engaged for years as Deputy Commissioner of Mining Statistics, solely on account of his skill and experience as a mining engineer and metallurgist, to which profession he was trained at Clausthal, and has adhered throughout life. To speak of him as merely a "literary man" is more absurd than to speak of the Rev. Mr. PROBERT as a metallurgist; for Mr. EILERS has never had even the experience of a literary career involved in trying it and failing in it. On subjects connected with his profession, he expresses himself, both in his own tongue and in English, with so much clearness as to warrant the belief that he might succeed in literature, if led to forsake his original calling—another point of emphatic difference. On this point we are tempted to say with Mr. PROBERT, "Let the shoemaker"—even if he be a clergyman—"stick to his last." What may be this gentleman's proper *métier*, we do not yet pretend to say. But we are arriving at it gradually by the process of elimination; and we are able to assure him that it is neither metallurgy nor biography.

In the amusing sketch of Mr. EILERS which Mr. PROBERT has produced, there is one oversight. A single fact has been allowed to creep in, which mars the harmony of the whole. It is true that Dr. RAYMOND is a friend of Mr. EILERS. But this slight discord is speedily resolved by the composer; and we have again the full chords of fiction. For it is not true that Dr. RAYMOND was in 1877 his "chief;" and it was without the knowledge of Dr. RAYMOND that Mr. EILERS undertook the examination of the Richmond works; nor did Dr. RAYMOND ever see Mr. EILERS'S report before its publication in the committee's pamphlet, or have any consultation with him about its contents.

As to the parenthesis, describing Dr. RAYMOND'S outrageous conduct during the Eureka-Richmond trial, it is sufficient to say that lawyers are habitually assisted by experts in the cross-examination of expert witnesses; that in this case, the Eureka lawyers formally requested that such cross-examination be conducted by an expert; that the managing counsel of the Richmond (himself supposed to be a mining expert) objected to "any body asking questions except a lawyer;" that the Court then suggested that an expert might sit by the counsel and make suggestions to him; that the "protest" to which Mr. PROBERT refers was made in "summing-up," and was suitably rebuked, both by the counsel on the other side and by the decision of the Court, which quoted with approval and at length the testimony of the witness assailed; and finally that the Richmond expert-lawyer also received suggestions from his expert witnesses; only he took them too late and did not follow them, and they could not enable him to save a lost cause. *Hinc illæ lachrymæ.*

It is fortunate for Mr. PROBERT that Dr. RAYMOND is not "bitterly hostile to the Richmond," or even to its managing director. If he were so, he might use the materials which that gentleman has put within reach, by his ill-advised defense, in such a way as to pillory him for the "laughter" of a much larger audience than the Richmond shareholders. But Dr. RAYMOND has no personal hostilities in the matter. He is under no obligations, and conscious of no prejudices, unless that may be termed a prejudice which is a deliberate judgment, formed upon evidence and experience.

Our columns are open to Mr. PROBERT, if he deems himself personally wronged by our strictures. Meanwhile we shall pursue the examination of his metallurgical argument, not for the vindication of Mr. EILERS—vindications, cheap as they are, need not be wasted—but for the purpose of showing whether Mr. PROBERT'S contributions to metallurgical literature are worthy of acceptance among the trustworthy data of the science. They may do very well to submit to a meeting of shareholders. The question for us is, Are they useful to metallurgists; and, if so, is it as example or as warning? This matter we reserve for another article.

*

PERSONALS.

Our Readers are invited to send us Items for this Column.

We shall next week illustrate and describe the famous Silver Cliff Camp, and some of its mines.

Professor CHARLES S. ALLEN has resigned the Chair of Natural Sciences in the University at Lewisburg, Pa.

There is a great strike in sandstone reported from Southern Utah. Our special has started for the battle-field.

It is said that the Baltimore Company, using the Lowe process, is making illuminating gas at 30 cents per 1000 feet.

Dr. T. STERRY HUNT is at present in Ohio, professionally examining coal and iron property. He expects to return shortly to Montreal.

The Bullion Club of New York is a success, and will exert a wide influence in making mining matters better understood, and in preventing the floating of bogus or unsound schemes.

The *Popular Science Monthly* is to be enlarged by absorbing the *Popular Science Supplement*. It will thus cover more completely the field of science, and relieve from embarrassment those who justly admired both of these able periodicals, but from motives of economy felt able to take only one.

At the recent annual meeting of the Engineers' Club of Philadelphia, the following gentlemen were elected officers of the club to serve during the year beginning January 11th, 1879: President, T. C. Clarke; Vice-President, J. B. Knight; Corresponding Secretary and Treasurer, Charles E. Billin; Recording Secretary, Herman Hoopes. Directors: William G. Neilson, D. McN. Stauffer, Rudolph Hering, Coleman Sellers, Jr., Percival Roberts, Jr.

REVIEW OF THE METAL MARKET FOR 1878.

To the metal trade, 1878 was a very trying year; not so much from the extent of the depreciation in the prices of all metals, but from the fact that the falling off in value was from a point that in many cases already showed considerable loss to both producers and holders. Since 1873 the course of prices has been almost steadily downward, and the rule has been that goods showed a loss before they reached the dock. Despite this, the domestic production has been steadily increasing, and the necessity of finding a market for it has caused us to introduce economies and improve qualities to such an extent that we have been able to take a very prominent position among the producing countries; and the indications are, that we shall not only hold the position we have thus gained, but shall steadily strengthen it.

A few years ago we were importing large quantities of lead, partly because consumers did not find our own product suitable to their purposes, especially for corroding. At that time this industry was protected by an import tariff. To-day, under the protection of skill and economy, we are producing an article that answers all purposes, and we are absorbing some of the important foreign markets formerly held by Europe.

Copper has for several years been produced so largely as to make it necessary for us to dispose of a large portion of our product in Europe. In producing spelter, we have not made such great strides. We have practically stopped importation, and have greatly reduced the cost of production; but in ordinary brands we are far from being able to send them out of the country. Our exports of spelter are confined to special brands.

Although the production of metals has increased very rapidly during a period of the greatest commercial depression, and we have introduced much skill and economy, yet we might have gone further in each of these

directions. At the copper mines of Lake Superior, there is still room for a considerable reduction in wages and the cost of production. At the silver-lead mines of the far West, there is room for very great economies; but it will take time before there will be that competition that will bring about lower cost of transportation upon fuel and supplies and upon the products ready for the market. In time, these mines will get their share of the surplus labor, not only of the East but of the whole world, when it will be possible to reduce wages. A very important item of cost in producing metals in the far West is fuel. In time, the construction of railroads will make the local lignite deposits available for smelting and steam purposes; and when this occurs, the vast mineral resources of that portion of our country will control the metal markets of the world.

Although prices are very low, the United States suffers less on this account than any other producing country. There may be exceptional cases in which present prices show a profit in other countries; but as a rule, they are ruinous to producers, and have already resulted in decreasing the world's production; and unless an advance in prices or some great economy in cost be found practicable, a further curtailment of production must take place.

Despite the great commercial depression existing all over the world, the low prices have brought about an immense consumption of metals which will still increase, even though prices advance only moderately, while with the revival of business there must be an immense consumption.

It is probable that with the world's great capacity of production at present, and by the construction of railroads into what are now unavailable districts, the prices of metals must necessarily be comparatively low in the future, and many mines where the cost of production is high must be closed for a long time.

There was much complaint during the past year as to the volume of business done. Yet there was never before in the history of this country so great a consumption of the metals of which we are treating. Merchants and consumers purchased only to supply their pressing necessities, and in that way failed to excite the market; while there was almost an entire lack of speculation. True, the balance-sheets of producers and dealers may not offer much encouragement, yet the statistics of consumption certainly do; for an increase in that direction indicates an approach to more profitable prices.

The following table shows the highest and lowest prices during each month of 1878, and without exception they were lower at the end of the year than at the opening:

MONTH.	Price of gold coin.	Copper, per lb., currency.	TIN, PER LB.—GOLD. Straits.	L. & F.	Refined.
		Cts.	Cts.	Cts.	Cts.
January	102⅞@101¼	17¾@17¼	15⅝@14¾	15¼@14¾	15¾@14⅝
February	102⅜@101¼	17⅝@17	14¾@14½	14⅞@14½	15 @14¾
March	102⅛@100¾	17¼@16⅞	14¾@14½	14¾@14½	15 @....
April	101⅜@100⅛	17 @16⅞	14⅝@14⅜	14⅝@14½	15 @14⅝
May	101 @100½	16¾@16¼	14½@14¼	14½@14⅜	14½@....
June	101¼@100⅝	16½@16	14⅝@14¼	14¼@14	14¼@....
July	100¾@100⅜	16¼@16	14¼@13⅞	14¼@14	14¼@14¼
August	100⅜@100½	16¼@16	13⅞@13½	14½@13⅞	14¼@14
September	100⅝@100¼	16⅛@16	13⅝@13½	13¾@13⅝	14 @....
October	100½@100⅛	15¾@15½	14½@13½	13⅝@13 1-5	13⅞@....
November	100⅜@100¼	15⅞@15½	17 @15¼	15¾@14½	15¼@15
December	100½@100	15¾@16	15⅞@14¼	15 @14½	15½@15

MONTH.	TIN-PLATES PER BOX—GOLD. Charcoal. Tins.	Charcoal. Ternes.	Coke. Tins.	Coke. Ternes.	Lead. Per lb.	Spelter. Per. lb.	Zinc. Per lb.
	$	$	$	$	Cts.	Cts.	Cts.
January	6⅜@6	6 @5¾	5½@5¼	5½@5⅜	4⅛@4	5¾@5⅝	7¼@6¾
February	6¼@5⅞	5⅞@5⅝	5⅜@5¼	5⅜@5¼	4 @3¾	5⅝@5⅝	7¼@6¼
March	6¼@5⅞	5¾@5⅝	5⅜@5	5⅜@5	3⅞@3⅝	5½@5¼	6¼@6⅛
April	6¼@5¾	5⅝@5⅜	5½@4⅞	5½@5	3¾@3½	5¼@ ...	6¼@6
May	6¼@5¼	5½@5⅜	5½@4⅞	5 @4⅞	3⅝@3¼	5¼@4¾	6⅛@6
June	6⅛@5¾	5⅝@5⅜	5½@4⅞	5¼@4⅞	3½@3.05	4¾@4⅝	6 @...
July	6 @5¾	5⅝@5⅜	5 @4¾	5 @4¾	3⅜@3.20	5 @4⅝	6 @5¾
August	6 @5¾	5½@5⅜	5 @4.70	4¾@4⅝	3½@3.35	5 @4¾	5¾@ ...
September	6 @5.80	5½@5¼	4¾@4.70	4¾@4.70	3½@3⅜	5 @4⅞	5¾@ ...
October	6 @5⅞	5⅜@5¼	4⅞@4.70	4.70@	3.70@3⅜	5 @4⅞	5¾@ ...
November	6 @5⅞	5⅜@5¼	5½@5	4.70@	3.95@3.55	5 @4¾	5¾@5½
December	6 @5¾	5⅜@5¼	5½@5	4.70@	3.90@4.00	4¾@4½	5¼@6½

COPPER.

The year opened with an estimated stock of 7,500,000 lbs., and a small business at 17¾c. As but little additional copper was expected in the market previous to the opening of navigation—from the middle of May to the first of June—the situation was considered a favorable one, and some predicted that the market would be entirely bare of copper before fresh supplies arrived from the Lake region. Consumers, however, failed to call for copper in large quantities, and prices steadily weakened, so that in April about 9,000,000 lbs. were sold for export, at, it was said, 16c. per lb., and the local market was nominally 17c. The business continued to be very small up to about May 1st, when 7,000,000 to 8,000,000 lbs. were sold to manufacturers and for export, at 16½c. for delivery up to the end of August, with the guarantee from the leading Lake companies that they would not sell any more copper during the term of the contract at less than 17c. The effect of this was to supply nearly all the requirements of the market for four months, and to leave what was known as the "outside" producers without a market for their copper, except at a reduction in prices to 16½@16¾c. The very small business that was afterward done, in connection with the arrival of fresh supplies of copper from the Lake district, caused a steady decline in price to follow, which was the only feature to the market until October, when 6,000,000 to 6,500,000 lbs. were reported as sold to manufacturers at 15½c., and 1000 tons for export at 15c. Following this to the end of the year, but little business was done. Prices improved somewhat, not upon merit, but owing to the larger companies holding their copper above the market, probably to enable them to get better prices on contracts which are expected early in 1879. The nominal price at the close of the year was 16c., a decline of 1¾c. per lb. from the opening price in January.

Our markets have been largely influenced the past year by the London quotations. Chili bars opened there in 1878 at £65 10s.@£66; Wallaroo, £73@£76; best selected, £72 10s.@£73 10s. Shortly afterward, the death of Augustine Edwards, a Chilian banker, who held a large amount of copper, was announced, and this, in conjunction with later financial troubles in Chili, the prospects of and afterward the actual cessation of hostilities between Russia and Turkey, and consequently a great falling off in the demand for cartridges and other war supplies, caused prices to decline almost steadily until Chili bars touched, in October, £54 15s. in London; Wallaroo, £66, and Burra Burra, £65. This occurred during the great financial disturbance in that city. Since then, £60 10s. was attained for Chili bars, and the closing price was £58@£58 10s. Wallaroo was quoted at the close of the year at £67 10s.; Burra Burra, $65, and Best Selected, £64 10s. As we have to compete with the London market in disposing of a very large portion of our copper, a decline of about £8 per ton during the year reduced the value of our copper in Europe correspondingly, or say 1¾c. per lb.

Messrs. F. W. Heyne & Bro. are authority for the following statistics for the United States for 1878:

		Lbs.
Stock on hand January 1st, 1878		7,500,000
Production of Lake Superior mines	38,000,000	
" " all other "	8,500,000	
		46,500,000
		54,000,000
Ordinary home consumption	30,000,000	
Consumption for cartridges exported	4,000,000	
Ingot copper exported	13,000,000	
		47,000,000
On hand December 31st, 1878		7,000,000

The above figures show an increase of 1,500,000 lbs. in production, 1,500,000 lbs. in exports, and 2,000,000 lbs. in ordinary consumption; a decrease of 500,000 lbs. in stock on hand, and 2,000,000 lbs. in amount consumed in the manufacture of cartridges exported.

The exports of ingot copper in 1878 were as follows:

To	Lbs	To	Lbs.
Liverpool	12,107	Bremen	160,280
London	466,951	Amsterdam	133,750
Hull	20,927	Rotterdam	105,200
Havre	8,824,589	Hong Kong	68,231
Hamburg	3,267,622		
Antwerp	50,000		13,109,657

At the end of 1877, the stock of copper in England was 22,896 tons, in France 8647 tons, and Chili bars afloat 10,225 tons, making the total supplies in sight 41,768 tons. On Dec. 31st, 1878, the English stock was 30,646 tons, the French 7139 tons, and the amount of Chili chartered and afloat was 12,884 tons, making the total supplies in sight 50,669 tons, or an increase of 8901 tons. The European imports for the year were 59,969 tons of copper, and deliveries 53,727 tons, showing an accumulation of actual stock of 6242 tons. Although all industrial matters were greatly disturbed in England during the latter part of the year, yet the deliveries for the last four months exceeded the average deliveries of the year. The European supply of fine copper was reduced to 6444 tons, 400 of which was American copper.

TIN.

The year opened with Straits in London at £66, here at 15¼@15⅜c., and Singapore $18.87½. L. & F. was quoted here at 15@15¼c., and Refined English, 15⅜@15¾. But very little business was done in English tin, the business throughout being confined almost entirely to Straits and Australian tin. Our domestic market was subject to slight fluctuations, under a depressive influence, until October, though there was a steady, good jobbing demand, which, by October, had so consumed the spot supplies that speculators were enabled to enter the market and control it during the remainder of the year. They were assisted in this by the fact that tin had been dropping so steadily and had proved so unsatisfactory a venture to those who had been dealing in it, that the shipments from the Straits were permitted to fall off, and at a time when there was little to arrive for a considerable time, the speculators seized the market, and, for a time, had things very much their own way, and had not lost complete control at the close of the year.

About the middle of January, 50 tons of Straits due in February sold at 14½c., at which time the London market had declined to £64 and Singapore to $18.25. London continued going down, reaching £63 before the end of the month, while Singapore recovered to $18.87½. Early in

February, about 1000 slabs sold on spot at 14⅝@14¾c. During the latter portion of the month, 1000 slabs sold to arrive at 14¼c. and some spot lots sold at 14½@14⅝c. During all this time, the London and Singapore markets had shown but little change. A further decline occurred, prices reaching £60 for London about the middle of May and $18.20 for Singapore, at which time 25 tons to arrive in June were reported sold at 14¼c. After this, a reaction set in which lasted until about the middle of July, and the London price ranged from £61@£62 10s., while Singapore recovered and held pretty firmly at $18.37½. During the latter part of July, the London prices were £61 10s. and Singapore advanced to $18.75, while sales were made here at 13⅞c., with rumors of even lower prices, and a steady decline followed.

Early in August, 2000 to 2500 slabs sold at 13⅝@13¾c., and later 2000 at 13½@13¾c.; and 25 tons at 13¼c., 60 days. By the middle of September the London price had declined to £57, and for October and November delivery, 13c. was the best bid here. At this time, however, the speculation, to which reference has already been made, set in, and during the last two weeks of that month, sales amounting to 115 tons to arrive at 13@13¼c., and about 7000 slabs on spot at 13⅛@13½c. were reported. The market here improved slightly early in October; but in London, owing to financial disturbance, the price declined to £53@£54, and Singapore quoted $17.50, with exchange at 3s. 9d. During the latter part of October, 50 tons were sold to arrive at 13¼c., 60 days, and 100 tons at 13¼@13¾c. On the spot, under an advancing market, sales of over 5000 slabs at 13¼@15½c. were announced. At this time the London market had recovered to £60, and Singapore to $18.75, with exchange at 3s. 9½d. Early in November, 25 tons, to arrive in December, sold at 13¾c.; 100 tons, October and November shipments, at 13¾@14c.; and 2000 slabs, on spot, at 15¼@15½c. Owing to an active speculation in London, the price advanced there to £62 10s., while Singapore declined to $18.25. During the balance of November the sales amounted to 3000 slabs, on spot, at 15½@16¾c., and 100 tons, October and November shipments, at 14½@15c., while the London market had advanced to £65 and Singapore to $20, with exchange at 3s. 9⅝d. Early in December, 75 tons, due in that month, sold at 15¾c., and, immediately following, 30 tons, at 14⅞@15c. In the second week of December a small business was done on spot at 15@15⅞c., and the London market declined to £60, although it recovered quickly to £62, closing at £61, while Singapore had fallen to $18.75. Our own market closed at 14¼@14½c. for all descriptions of tin except Banca.

We are disappointed in not receiving the foreign statistics for this article. On December 1st the actual stocks in Europe amounted to 13,110 tons, and the quantity afloat to 4500 tons. At the corresponding time in 1877 the actual stocks were 11,980 and the quantity afloat 3000, making an increase in the quantity in sight during the year of 2630 tons.

TIN PLATES.

The market for tin plates attracted but little attention, and prices declined, though there was a very steady and very large consumptive demand throughout the whole year. This, indeed, has been greatly increased during the past few years, owing to the low price of the article. The business in plates, as in all metals, was greatly curtailed, owing to the appearance of the yellow fever in the South, which practically cut off all the fall trade from that section of the country. As will be seen by the table of prices, the decline for the year amounted to from 25c. to 75c. per box.

LEAD.

By the courtesy of Mr. E. A. Caswell, of 240 Pearl street, this city, we are furnished with the following statistics relating to lead, which will appear in his usual annual circular, reviewing the market:

	1877. Tons.		1878. Tons.	
Production:				
Utah	21,602		19,310	
Nevada	17,611		27,735	
Colorado, etc	2,600		6,500	
California	3,498		3,857	
		45,311		57,402
Missouri and Galena, soft	19,500		14,511	
" hard	8,314		9,391	
		27,814		
Government sales		200		23,902
		73,325		81,304
Imported and reëxported		6,224		
		79,549		
Domestic consumption	62,325		70,908	
Gain in stock	4,000		3,000	
Exports to Europe:				
Pig lead			725	
Cartridges			1,350	
Exports to China			5,321	
		73,325		81,304

Owing to the low price of lead, the production of Missouri and Illinois fell off 3912 tons. Partly from the same cause, but largely from the exhaustion of ore-bodies that were previously being worked at a profit, the production of Utah shows a loss of 2292 tons. Our total production, however, shows a gain of 8179 tons. Owing to the productiveness of the Eureka District, Nevada, where lead is quite incidental to the production of gold and silver, the increase was 10,124 tons. According to Mr. Caswell, the production of lead in Colorado was 6500 tons, being an increase of 3900 tons over 1877. This is the result of the wonderful discoveries of carbonates at Leadville. Owing to the lack of transportation facilities, this camp was unable to handle profitably nearly as much as it might have produced. The distance to railroad is now very much reduced, and during the coming summer it is expected that at least one railroad will be completed to Leadville. Until this occurs, we are not likely to realize the great importance of this camp in its bearing on the lead market, and it is probable that a very large amount of bullion will be stored, awaiting cheaper transportation, so that the last half of 1879 will probably show very large receipts from there.

Our consumption during 1878 was larger than in 1877, and there will, probably, be even a greater increase this year; while, from present indications, our production will also increase, but, owing to the uncertainty of some of the ore deposits upon which we are dependent, it is impossible to judge to what extent.

For several years we pointed to the necessity of our producers preparing themselves for low prices, and finding a foreign outlet for our surplus. Our predictions were realized in 1878. It is gratifying to note our large foreign trade, and, from the quantity sent to China, we may well infer that our products are giving satisfaction. There is still a very large quantity of lead sent each year to China and the East by Europe, so that there is yet a market for considerable lead to be shipped from San Francisco.

The consumption of lead was greater than in 1877, yet the market bore a very quiet appearance during most of the year. The price of ordinary lead at the opening of 1878 was 4½c.; but a steady decline followed until 3·05c. was reached in June. The Eureka Company then withdrew all its lead from market, and prices again advanced until 4c. was reached in December. During the early portion of 1879, the outlook is favorable to firm prices; but for the later portion, unless prices should advance all over the world, or our larger lead deposits should give out, the o utlook is not so encouraging.

SPELTER AND ZINC.

The opening price was 5¾c. for ordinary spelter and under a quiet business steadily declined until 4⅜c. was rea ched in December, while the nominal closing price was 4½c. In special bran ds, there has been a very fair foreign business, the exports having been from this city as follows:

	Lbs.
To Hamburg	2,727,934
" Stettin	75,000
" Amsterdam	11,200
" London	22,404
Total	2,836,538

During 1879 there will be an effort made to increase our export of zinc ores to Europe. Those now sent average about 30 per cent of metal, and are mined in New Jersey. It seems unreasonable to expect to be able to sell our ores to Europe at such prices as will make it profitable to work them there, after paying transportation charges for carrying so great a distance; yet when we consider that labor and fuel are much cheaper there, it does not appear so improbable as many might suppose. In time, however, we should be able to introduce such economies in manufacturing as to make it more profitable to smelt our own ores.

Sheet zinc opened at 7¼c., and, with a quiet business and a strong competition among manufacturers, the price steadily declined, reaching 5½c. in November and December, when one of the two remaining active manufacturers bought out the other, and the price advanced to 6½c.

THE SCOTCH IRON TRADE.

The statistics of the Scotch iron trade for 1878 are at hand. The average number of furnaces in blast in 1878 was 90, against 103 in 1877. The average make per furnace per week in 1878 was 193 tons, as compared with 184 tons the previous year. The number of furnaces in blast December 25th was 91, as compared with 86 a year previous. The whole number of furnaces is 154. The total production was 902,000 tons, ag ainst 982,000 tons in 1877. The consumption in foundries in 1878 was 153,500 tons, and in 1877 175,000 tons. The consumption in malleable iron works in 1878 was 140,500 tons against 160,000 tons in 1877. The exports were 233,908 tons, as compared with 274,409 tons in 1877. Stocks of iron in store increased during year 31,357 tons, and in the hands of makers 142,643 tons, which made total stocks on hand at end of year 679,000 tons.

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CANADIAN GOLD MINE.—A nugget of pure gold, weighing 38 ounces, was lately found in the gold mine worked by Messrs. Saintrouge & Co., in Beauce County, near Quebec. The mines are said to be very rich, two weeks' work having furnished 150 ounces of gold: the number of men working is not stated. The means employed are of the most primitive character. The gold is found in boulder clay underlying glacial drift, also in quartz accompanying the clay, but not in large quantities.

THE CASSON-DORMOY FURNACE.

The accompanying engraving represents a highly successful gas puddling and mechanical stoking furnace, known as the Casson-Dormoy furnace.

This furnace has a gas producer in lieu of the ordinary grate. The puddling chamber is perfectly circular, the sides and bottom plates being so arranged as to expand and contract with the variations in the temperature of the furnace.

The gas producer *B* is constructed similar in form to the "Siemens," but instead of the air being heated in a "regenerator," it is drawn or blown down the sides of the furnace chimney or flue, and under the bottom crown and walls of the producer, the gases being fired at the bridge; by this means a temperature of about 800° is obtained. The condition of the furnace is completely under the control of the puddler, who by arranging the blast-valves, obtains either an oxidizing or reducing flame, as the condition of the iron may require. The producer is fed from a large hopper *A*, filled with slack. At the lower end of the hopper there are 2 revolving drums driven by a ½ H. P. engine, thus dispensing entirely with manual feeding. The feeding mechanism is shown in detail in Fig. 2. By means of dampers fixed in the gas flues *C*, the producer can at any time be disconnected from the puddling chambers; this is done every Saturday or holiday times, and causes the necessity of relighting the producers. At Round Oak Works the producers have remained three weeks without any feeding, and have been nine months without being put out.

Fig. 1

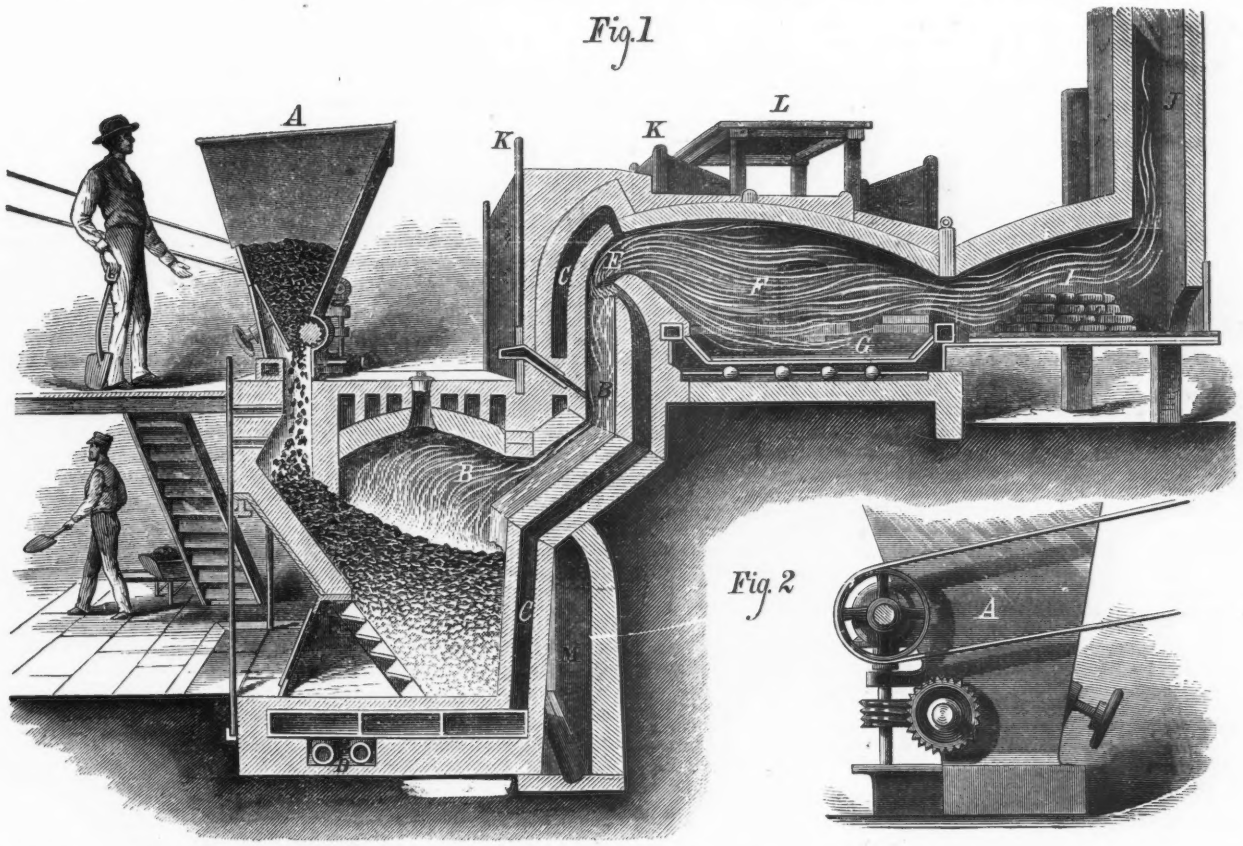

Fig. 2

The puddling basin *G* rests on a brick pillar 1 foot 4 inches from the ground. On this is set a wrought-iron circular open dish, with sides about 4 inches deep; within this dish eight or more friction balls, 5 inches diameter, are placed at equal distances from each other. On these spheres two cast-iron semicircular plates are laid; on these plates again four side or segment plates are bolted together externally by means of wrought-iron pins, and forming a complete circle. Upon these are placed loosely the shelf or table plates which rest upon brackets fixed to the rail. Buck-staves *K* support the walls of the furnace. All the plates forming the basin are thus free to expand and contract with the variations in the temperature. The dish below being kept full of water, the evaporation produced from the above efficiently cools the bottom and sides and consequently the fettling. By the absence of inequalities and corners its shape does away with the difficulties usually attending the working of a mechanical rabble, at the same time effecting a considerable saving in fettling.

The circular form of basin easily enables the rabbling to be worked by machinery, as there are no jams that the rabbles can not reach in their courses from right to left and back again.

The pig-heating chamber *I* is fixed between the puddling basin and the chimney or boiler, and, besides serving as a neck to the furnace, heats the pigs preparatory to their being passed over the bridge into the furnace.

When the iron is ready to ball, the heating chamber *I* is charged a few pigs at a time; when all the balls are drawn out of the puddling basin *G*, these pigs are passed over the bridge, and as soon as they are melted, the rabbles, which are so set that they can not catch into each other in crossing, are fixed to the machine and worked at a slow motion for about five minutes; the speed is then quickened until the iron boils, when the slower speed is put on till the iron drops. The heating chamber *I* is then charged. The rabbles are then removed, and the real work of the puddler begins by his balling up the iron in the usual manner. The balls, which are of the ordinary size, are drawn from each door and the cinder tapped. A few shovelfuls of hammer slag are thrown on the bed, and the pigs, which have meanwhile been supplied into the preparatory chamber, are again passed over. These generally melt on the bed in ten minutes or a quarter of an hour. The charges of about 13 cwt. usually take from an hour and twenty to an hour and thirty minutes.

WIRE-ROPE HAULAGE IN MINES.

We learn from the Greenup (Ky.) *Independent* that the Coalton coal mines in Kentucky use an endless wire rope to haul the cars in and out in a tunnel 1½ miles in length. The engine has two 10 × 24-in. cylinders and two 7-ft. diameter drums, placed one in front of the other, over which the ¾-in. wire rope runs respectively five and four times. At the other end of the tunnel the rope runs over a movable drum, so arranged as to take up the slack of the rope. There are two 40 in. × 28 ft. and two 26 in. × 24 ft. plain cylinder boilers. One engineer, one fireman, and one train conductor now do the work formerly done by fifty mules and fifteen drivers.

That portion of the endless wire rope which runs underneath the track does the pulling, and by the reversing of the engines it is applied to moving of the train in either direction—the pushing of empty cars into cross-entries, which curve into the tunnel-track, or the taking of loaded cars out of them. At each cross-entry a bell-pull communicates with the engineer in his engine-house, and informs him if the conductor wants the train to stop, etc. At the same time a dial, worked by a pulley from the drum-shaft in the engine-house, indicates to the engineer the exact place in the tunnel where the train is. At present only six of the tunnel cross-entries are worked.

The train makes about fifteen trips a day, taking out sometimes as many as 100 and more loaded wagons of 22 bushels each.

The coal is separated by three sets of screen bars, gauging 1½, ¾, and ¼ inches, the miners only receiving pay at 50 cents per ton for the coal which passes the 1½-inch screen. From the chute the coal is directly dropped into the railroad coal-cars.

The Coalton coal consists of three layers, measuring here in all 6 feet. The upper third section, however, contains so much sulphur that the miners have to leave this in the room, while in the cross-entries they have to take out the full face of the vein. Their mode of mining mostly consists of bearing in on the lower section, and then shooting down from below the third.

The capacity of the coal mines, if in full operation, is 15,000 bushels per day, but at present only 8000 bushels are mined (25 bushels = 1 ton).

The total number of miners now employed is 165, aided by 25 outside hands and drivers.

Mr. W. F. Gaylord is General Superintendent of the mines. Mr. Dave Ramsey is in charge of the outside work, and Mr. Jacob Schu has sole control of all the inside work.

FEARS OF A MINERS' STRIKE.—PITTSBURG, January 15.—The coal miners along the railroads of this end of the State yesterday resolved to ask three cents per bushel instead of two and a half. It is feared six or seven thousand men will strike.

MINING REPORTS ON METALLIC LODES.—II.

By Francis L. Vinton, E.M.

(*Concluded from page* 30.)

Ordinarily the visiting engineer is under no obligation to make an accurate and, consequently, very laborious and protracted survey of a mine; he needs, therefore, for his measurements only a compass and tape, or, at most, a tape and cord, with suspended compass and circle; no refinement is, in fact, necessary in the circumstances unless directly commanded; for the objects of precision are quite special and principally either for the record of a claim or the settlement of disputes, and surveys to these ends can only legally be made by a commissioned mineral land surveyor of the State.

In the description of a stope, it may first be named or numbered with reference to the drawing; the method of stoping next explained and illustrated; the original dimensions and actual worked-out volume will be stated; the character of the rock, the amount of stripping or rock moved to get at the ore-vein; the fathoms per day stoped, a fathom being six by six feet on any width: the price per fathom, the tons of ore per fathom, number of men in the stope, etc., will be given. The phenomena regarding walls and accidents will be noted, and, finally, as in all cases where ore is visible, its superficies will have been measured and pictured, its character will be described, and the points of sampling indicated. The assays are quoted, and if it is possible to obtain a record of mill-runs from that portion of stope already worked, it should not be neglected; for the past record of a stope or any other part of a mine is the only certain thing about it, proving always what the mine may do. The future yield of a stope or drift can not be unconditionally estimated. Even if the ore continues according to some theory, its title in silver may suddenly change; one can only say: Here are the dimensions of certain surfaces of ore, sampled at such points two feet deep; they look well; they assay so high; if they are bodies that persist in this or that manner, or if on the whole the stope or drift maintains its past average, then there is so much "ore in sight," and of such a value, that will cost so many dollars to extract and get to market. In a true metallic-vein district, where the deepest mines do never absolutely fail, it is fair in pricing a promising prospect to give it the benefit of its possible "future." If the crevice bears good ore and is well proved into the solid rock—if it has paid handsomely, the presumption is, though expenses will increase in sinking, rather that it will continue to pay than the contrary; wherefore, so long as the claim is not already worked to great depth or extent, it has undoubtedly more value than that of the "ore in sight;" but the value of mines in general, and the profits of mining, are seldom justly apprehended, except by miners, because the public attention is mostly attracted and dazzled by the exceptional records of brilliant bonanzas. As a rule, these properties are stocked too high, held too high, considered highly hazardous, yet expected to return steadily enormous revenues, investments altogether outside of ordinary conditions and scarcely to be treated like more familiar affairs. But, in truth, exploitation is a straightforward business concern, not extravagantly remunerative, requiring attention, the following of rules, and the expenditure of capital, exactly in the fashion of other money-making operations of men. A mine is, indeed, a possession that in time must become worthless, and meanwhile, therefore, should return all the money paid for it, besides that put into it, plus a certain percentage; the irregularity of ore-bodies and occasional alarming demands on money for dead-work may sometimes shake faith in the truest kind of a fissure; but good management can make the revenue of a fair mine quite constant, and in that view it should be reported on. If a determinate profit, therefore, can be counted on with probability under proper conditions of working, it is easy to estimate the approximate value of a mineral claim; but that estimate will gain much in accuracy, no doubt, if profits on paper are judiciously affected with a big coefficient of safety.

In describing the shafts of a mine, they are named or numbered, their slope and their dimensions are given, and particulars furnished regarding the style and condition of the compartments, the ways, the cribbing, and timbering, platforms, ladders, etc. In sampling a mine, it is presumed that the examiner has entire liberty, and is able to exercise ordinary sagacity against salting. Sampling ought to be a regular mining work, done with powder, under the eyes of the engineer, to the end not only of obtaining considerable quantities of ore, but also of judging the hardness of the surrounding rock. In this connection it is scarcely necessary to say that "specimens" may be obtained in any good mine running a thousand dollars, and that such would prove worthless to an opinion; but it is well to remember that even a fair average sample of some face would be of little economic value unless its run were closely compared with the cost of mining a ton of such ore at the point sampled, since that will vary all over the mine with the hardness of rock, lay of the vein, etc. Evidently the best way to sample a mine is to lease and work it two or three months, but this can not always be made convenient; the examiner must content himself to mine across the pay-vein and low-grade rock at different points on the ore-faces, to obtain representative sacks of each from all quarters, crush, mix, quarter down, and assay the samples at high heat, pan the low grade, and assay the concentrate, though that test is too favorable to a concentrating ore. Then figure the rock to be moved, per ton, of each kind of ore, and the cost, to work up in the subsequent estimates.

The description of the exterior sets forth the buildings and their contents; the hoisting and pumping plants and engines; states the extreme power of these and their present work, the number of men employed about them, their wages, and the cost of fuel per ton of ore, or per day. If turbines are operated, it is mentioned, and for how many months in the year. The dimensions and character of the dump are set down, and if it can be profitably picked or jigged in place observed. All exterior transportation, cars, tramways or cables, roads, trails, and cost of shipment to mill or market are treated of; woods, water-powers, mill-sites, the character of the seasons, and their effect on mining and freighting noticed. The mining population of the district, rates of living, reduction works, mills, and markets near; their prices for ore and method of buying are discussed, the propriety of erecting crusher and rolls for sampling at the mine considered, and any improvements in the manner of working the property. Finally is added a complete estimate of the cost of a ton of each kind of ore from mine to market, counting, besides mining and transportation, the dead-work, and mill charges for sampling, this to be compared with the probable average value of the ore and its average continued output, according to the best judgment of the engineer.

The reports of a "mining expert" are called for by two essentially antagonistic interests, the buying and the selling; and in the latter he occasionally has trouble with his employer. In the foregoing lines I have enumerated most of the particulars the buyer ought to be acquainted with. He should exact all this information about all parts of the mine; he should order the report himself quite independently of the seller, and pay for it. The seller is prepared to pay well, but expects to "boss the job;" he usually finds it preferable to demand an affirmative report on only the favorable aspects of his mine, which he perfectly knows and exclusively specifies. For example, he requires assays at given points alone; wants no remarks about title and injunctions, desires no estimates of cost, etc. The expert in such case finds it not his immediate affair to proclaim the litigations on a property or to expatiate largely on the low grade or ill-conditioned portions of a mine; he is engaged to tell the truth, of course, but not the whole truth by any means. In short, a close ethical view of his situation makes him apprehend a threatening of moral strabismus; and, to straighten the vision of all, I sincerely wish the clear-sighted body of mining engineers would agitate the question of reports to sellers.

THE AMERICAN IRON TRADE IN 1878.

From the Bulletin of the Iron and Steel Association.

THE SITUATION AT THE BEGINNING OF THE NEW YEAR EXCEEDINGLY HOPEFUL.

We are again placed under obligations to our special correspondents for information which enables us to give our usual annual summary of the condition of our iron and steel industries at the beginning of a new year. The information thus obtained has been analyzed with care, and so much of it as relates to pig-iron has been embraced in a table, which is herewith presented, in connection with comparative figures for 1877, which are taken from our last annual report. As more detailed information than has yet reached us will be received in due time from individual producers, it is to be expected that the figures of production, stocks, etc., which will appear in our next annual report will be slightly different from those of the table; but the general results in districts and States, and in the country at large, will not be materially altered. The figures now given in the table and in the remainder of this summary are partly estimates, but they are estimates made, not by us, but by practical iron-masters, each one of whom testifies only concerning his own district and of his own knowledge. We are thus particular in giving all the facts which affect the tabulated and other statements which are here submitted, that the trade may know what degree of credibility to attach to these statements. We think we are justified in claiming for them substantial accuracy in all essential particulars.

Preliminary Statement of the Production of Pig-Iron in the United States in 1878, *the Stocks unsold at the close of the year, and the number of Blast-Furnaces in and out of blast at the close of the year.*

	States.	Condition of furnaces Dec. 31st.				Production of pig-iron. Net tons.		Stock on hand Dec. 31st. Net tons.	
		In blast.		Out o blast.		1877.	Estimated for 1878.	1877.	Estimated for 1878.
		1877	1878	1877	1878				
	Maine and Vermont	1	2	2	0	2,170	1,900	2,850	3,050
	Massachusetts	0	1	6	5	2,904	1,300	14,467	11,000
	Connecticut	5	7	5	3	14,443	13,000	5,068	7,000
	New York	24	24	35	34	230,442	234,000	79,488	55,000
	New Jersey	7	4	12	15	52,969	50,000	4,877	10,000
Pennsylvania.	Lehigh Valley	33	28	18	23	335,059	330,000	34,082	47,000
	Schuylkill Valley	19	14	31	35	155,434	146,000	99,406	67,000
	Upper Susquehanna	7	10	18	15	56,776	84,000	4,289	5,500
	Lower "	17	19	20	18	111,252	140,000	21,775	17,000
	Shenango Valley	12	7	18	23	145,179	122,000	25,389	17,000
	Bituminous furnaces outside of Shenango Valley	28	28	19	18	320,020	257,000	29,629	29,000
	Charcoal	15	17	23	20	29,636	28,000	14,163	14,000
	Total for Penn.	131	123	147	152	1,153,356	1,267,000	238,193	206,500
	Maryland	6	7	18	17	36,959	33,000	4,935	6,000
	Virginia	5	4	28	29	12,434	13,000	3,840	1,500
	North Carolina	0	0	7	7	325	200	100	200
	Georgia	2	2	9	9	13,223	12,500	4,950	3,500
	Alabama	7	5	6	7	41,241	37,500	14,508	8,000
	West Virginia	2	4	10	7	34,905	52,500	2,050	2,000
	Kentucky	7	5	15	17	47,607	36,000	16,145	16,000
	Tennessee	6	7	16	16	25,940	36,000	15,798	15,000
Ohio.	Hanging Rock Region	21	19	26	29	84,756	43,000	63,081	33,000
	Mahoning Valley	8	8	13	9	136,526	109,000	16,454	17,000
	Hocking Valley	7	6	6	7	23,895	70,500	2,512	10,000
	Bituminous and charcoal furnaces outside of above districts	13	9	13	17	155,221	145,000	38,920	43,000
	Total for Ohio	49	42	58	62	400,398	367,500	120,967	103,000
	Michigan	9	8	23	18	82,216	72,000	34,892	21,000
	Wisconsin	4	6	11	9	22,205	50,000	6,427	1,300
	Indiana	1	0	7	7	15,460	0	3,194	700
	Illinois	2	4	10	8	61,358	81,000	7,792	3,000
	Missouri	2	5	16	13	73,565	42,000	61,632	42,000
	Oregon, Utah, and Texas	0	0	5	5	525	1,500	120	250
	Grand total	270	260	446	440	2,314,585	2,382,000	642,351	516,000

Pig-Iron.—The production of pig-iron in the United States in 1878 was about 70,000 net tons (2000 lbs.) in excess of the production of 1877. In

1877 there were produced 2,314,585 tons, and in 1878 the production was 2,382,000 tons. A reference to our table will show which States increased and which decreased their production during the past year. Pennsylvania shows an increase of over 100,000 tons, while Ohio shows a decrease of over 30,000 tons. In 1878 Pennsylvania made more than 50 per cent of the total production of pig-iron in the United States.

The pig-iron produced in 1878 we classify as follows according to the kind of fuel used, and give comparative figures for preceding years :

KIND OF FUEL.	1878.	1877.	1876.	1875.
Anthracite	1,039,000	934,797	794,578	908,046
Bituminous	1,093,000	1,061,945	990,009	947,545
Charcoal	250,000	317,843	308,649	410,990
Total	2,382,000	2,314,585	2,093,236	2,266,581

At the close of 1877 there were in the United States 716 blast-furnaces, of which 270 were in blast and 446 were out of blast. At the close of 1878 there were 700 furnaces, of which 260 were in blast and 440 were out of blast. These figures, taken in connection with those of production above given, indicate an increased average production of the active furnaces in 1878 over 1877. During 1878 there were 18 furnaces torn down, burned down, or otherwise taken out of the active list, and there were two new furnaces erected—one in Ohio and one in Tennessee, showing a net decrease in the year of 16 furnaces.

The stocks of pig-iron on hand and *unsold* at the close of 1877 amounted to 642,351 net tons. At the close of 1878 they were much less, about 516,000 tons. At the close of 1876 stocks amounted to 686,798 tons. These figures show a decrease in stocks of 44,447 tons, from 1876 to 1877, and of 126,351 tons from 1877 to 1878. In the whole of Pennsylvania there was a decrease in 1878 of about 30,000 tons, although in the Lehigh Valley there was an increase of about 13,000 tons. There was a decrease in New York of about 24,000 tons; in Ohio of about 17,000 tons; and a marked decrease in Michigan, Missouri, and some other States. The shrinkage in stocks was remarkably uniform in all iron-producing States, and it is very significant of the caution which characterized this branch of the iron trade throughout the year. No State materially increased its stocks in 1878.

The pig-iron on hand and unsold at the close of the year, and at the close of other recent years, was made with fuel as follows :

KIND OF FUEL.	1878.	1877.	1876.	1875.
Anthracite	192,000	239,493	268,122	274,743
Bituminous	150,000	156,818	174,302	165,482
Charcoal	174,000	246,040	244,374	320,683
Total	516,000	642,351	686,798	760,908

The consumption of pig-iron in 1878 was apparently greater than in 1877. Production was greater, and the reduction of stocks was also greater. There are unknown quantities that elude the grasp of the statistician in attempting an estimate of the consumption of pig-iron in any given year, so that an exact statement is never possible; but with the two most important elements of the problem given—production and stocks—an approximation to a correct result is not difficult. In 1878 production was increased about 70,000 tons, and stocks were decreased about 126,000 tons. As our imports of pig-iron in 1878 did not vary greatly from the imports of 1877, and as our exports of pig-iron were less, and as we have failed to detect any speculative movements in 1878 that would withdraw large blocks of pig-iron from the market, we think it entirely safe to assume that we increased our consumption of pig-iron in 1878 over 1877 about 195,000 tons.

Manufactured Iron and Steel.—It follows from what has just been said that the rolling-mills of the country were more steadily employed in 1878 than in 1877. But of this there is abundant and positive evidence additional to that which is based upon the increased production of pig-iron and the decrease in pig-iron stocks. Pittsburg rolling-mills and steel works were more generally employed in 1878 than in 1877. Iron ship-building is known to have been more active in 1878 than in 1877. The elevated railroads of New York have required a large quantity of finished iron. Iron bridge-building on home and foreign account has shown an improvement over 1877. Government and other public buildings have been pushed toward completion, and have required many thousand tons of iron. There was a large increase during the year in the number of locomotives and railroad cars manufactured. There were more miles of railroad constructed in 1878 than in 1877. Ten out of eleven of our Bessemer steel works were busy during the whole year in the production of steel rails, and the manufacture of iron rails during the year was certainly as active as in 1877. Other steel works are known to have been busy. The consumption of old iron rails in 1878 is known to have been quite large, both in iron rail mills and in other rolling-mills. The prosperity of our farmers, who have had two good consecutive crops, for which they have found a market, and the general revival of business throughout the country in the latter half of 1878, were influences which favorably affected the iron trade of the country. The railroads were generally well employed throughout the year.

Iron and Steel Rails.—We have above referred to the improvement in this branch of the iron trade during 1878, but we now add more specific information concerning the manufacture of both iron and steel rails in that year. In 1877 the production of iron rails amounted to 332,540 net tons, which was a great reduction from the product of 1876, which was 467,168 tons. In 1878 this decline was wholly arrested, the production during the year being fully as great as in 1877, and probably a few thousand tons greater. In 1877 the production of Bessemer steel ingots was 560,587 net tons, and the production of Bessemer rails was 432,169 tons. In 1878 the production of ingots was about 730,000 net tons, and the weight of Bessemer rails produced was about 600,000 net tons. For these statements we have the best authority. Putting the iron and steel rail products of the year together, we have in round numbers a total of 930,000 net tons as the rail product of the year. This product has only once been exceeded in our history—in 1872, when the product reached 1,000,000 net tons. In 1879 we shall probably equal even that immense product.

Production of Lake Superior Iron Ore.—The production of iron ore in this celebrated mining field was much greater in 1878 than in 1877. The shipments in 1878 amounted to about 1,125,000 gross tons, against 960,982 tons in 1877. This large production has only once been equaled in the history of the district—in 1873, when the shipments amounted to 1,167,379 tons.

Railroad Construction.—The mileage of new railroads constructed in the United States in 1878 was very much greater than in 1877, and greater than in any other year since 1873. The *Railroad Gazette* publishes detailed statistics for 1878, which show that in that year there were built and track laid upon 2688 miles of new railroad, against 2177 miles in 1877, 2657 miles in 1876, 1758 miles in 1875, 2305 miles in 1874, and 4069 miles in 1873. The recovery in 1878 from the depression in railroad building which existed in 1877 was marked and decided, and we need scarcely add forms one of the most encouraging signs of the day.

Prices.—The only discouraging feature of the iron trade of 1878 is that which relates to prices. In both iron and steel rails there was an improvement; but in pig-iron and bar-iron there was a decline from the exceptionally low prices of 1877. The following table shows the range of prices throughout the year :

MONTHS.	No. 1 Anthracite Foundry Pig-Iron in Philadelphia.	Iron Rails at Works in Philadelphia	Bessemer Steel Rails at Works in Philadelphia.	Best Refined Bar-Iron in Philadelphia.
January	$18.50	$32.50	$41.00	$44.80
February	18.50	32.50	41.50	44.80
March	18.50	32.50	41.50	44.80
April	18.50	32.50	42.00	44.80
May	18.00	32.50	43.50	44.80
June	17.25	32.50	43.00	44.80
July	17.25	33.00	43.50	44.80
August	17.50	33.00	42.50	44.80
September	17.50	33.00	42.50	44.80
October	17.00	33.00	42.50	42.56
November	16.50	33.00	42.00	42.56
December	17.00	33.00	41.00	42.56
Average	$17.67	$32.75	$42.20	$44.24

The decline in the price of pig-iron during the year was $1.50 a ton, and on bar-iron it was one tenth of a cent per pound, or $2.24 a ton. Iron and steel rails sold during the year at average prices which were higher than quotations in January.

Conclusion.—The old year, take it all in all, was a more active and a more prosperous year for the American iron trade than either 1876 or 1877. There was an improvement in the demand for all iron and steel products, and prices, although not satisfactory, were well maintained except in the case of pig-iron. This branch of the trade has had a hard struggle, and many furnaces have been run without profit. The new year opens with the promise of a still more active and more prosperous business for our iron and steel manufacturers than the old year gave to them. Business is in fewer hands, and home competition can not be so desperate as it has been. Foreign competition is for the present not to be dreaded. Prices, it is hoped, are at last at the lowest point to which they can possibly fall, while the unmistakable and undeniable revival of general prosperity throughout the country gives every assurance of a continuance of the increased demand for iron and steel which characterized the old year.

CORRESPONDENCE.

BANGOR, ME., January 11, 1879.

EDITOR ENGINEERING AND MINING JOURNAL :

SIR : I venture to congratulate you on the vindication that the past two years have afforded of the position you assumed about the coal trade, and to add the testimony of one man, at least, to the belief that your views as to the immediate future are as correct as they have been demonstrated to be in the past.

And I fully believe the point you make as to educating the working people to "right living" is of *supreme* importance at this time. I have dwelt upon it often the past year, and have endeavored to enforce it, to some extent, by supplying our men with only such goods as were fitting. And my experience in Pennsylvania, as well as later in New England, convinces me that there is a loud call for improvement in this direction, and that there is more real economy of food products, at least, among the educated, well-to-do classes than among the working people.

You can do no better service than to keep "harping" on this subject.

Yours very truly, O. W. DAVIS, JR.

NEW LUNAR CRATER.

Dr. H. J. Klein, in Cologne, has been watching the moon's surface with special care for about twelve years. Most of the investigations of the last century, by Schröter, Herschel, Mädler, and others, have failed to discover any active volcano in the moon, so that the opinion has become general that our moon is a dead world, a burnt-out and fossil heavenly body. This opinion must now be given up, since there is evidence of the present activity of powerful forces upon the moon's surface. Dr. Klein has discovered a crater near the center of the visible hemisphere westward of Hyginus, in a broad, level plain, appearing at the time of the first quarter as a dark shadowy gulf of about 4000 meters (1·24 miles) diameter. Its inner surface exceeds all the present active craters of the earth, except that of Kilauea in Hawaii. Further observations which have been undertaken, especially in England and America, will doubtless show whether its activity still continues.—*Deutsche Rundschau, trans. in Jour. Franklin Inst.*

MORAL INFLUENCE OF THE STUDY OF NATURAL SCIENCE.—If great care is taken to bring out the evidence in every case, and no statements are permitted to pass unquestioned which have not been tested by observation or experiment, a great respect will gradually arise for the truth. I believe that a conscientious regard for the truth may be established in this way without that word itself ever having been mentioned. Accuracy in observation and moderation of statement are certainly the surest guardians, if not the keepers, of truth, and these two qualities are more easily obtained by the study of objects than by any other means.—*Alpheus Hyatt.*

PROGRESS IN SCIENCE AND THE ARTS.

LAST YEAR'S PROGRESS BRIEFLY RECAPITULATED.

In the following, we present to the readers of the JOURNAL a brief *résumé* of progress in those departments of science and the arts that bear more directly upon the subjects to which the JOURNAL is devoted. The departments of *Mining* and *Metallurgy* have been so elaborately covered by the JOURNAL that reference to these has been omitted as a task of supererogation.

In the field of pure *science*, the past year witnessed the announcement of two alleged discoveries which are both surprising and revolutionary; though neither of them is, as has been affirmed, subversive of old and well-established principles. One of these is the announcement to the French Academy and to the Royal Society, by Mr. J. Norman Lockyer, the eminent astronomer, and Editor of *Nature*, that he has succeeded in obtaining experimental proof of the decomposition of certain substances hitherto considered to be elementary, a fact which he places in connection with certain others, obtained from the study of the chemical constitution of worlds other than ours, to establish the inference that the various substances (some 66 or more), which we know as elementary, are in reality so many different aggregations or forms of some one substance, into which they may all be resolved. This primal material at the basis of all the various forms of matter known to us is, in Mr. Lockyer's estimation, hydrogen. The proofs which Mr. Lockyer adduces to establish this remarkable assertion are derived wholly from spectroscopic observations, and before they will receive general acceptance will require to receive the most irrefragable confirmation. It may be noted, however, in connection with this alleged discovery, that its revolutionary character is more apparent than real, since chemists have never taught that the 66 or more different forms of matter which they have recognized were demonstrably elementary or simple substances; all that they have ever done, or, to put it differently, all that they have ever been justified in affirming of them, is that the substances in question have thus far successfully resisted every effort to further decompose them. The proof of their simple nature, therefore, has never been claimed to be other than negative, and the admission that the discovery of more refined and subtle methods and processes of decomposition might supply the chemist of the future with the means of decomposing some or all of the so-called elements into several constituents has been freely acknowledged. Some chemists, indeed, have even maintained, what Mr. Lockyer now claims to have experimentally verified, namely, that the so-called elements are in effect only secondary forms or manifestations of one and the same substance, basing their belief upon the peculiar and inexplicable relationships and resemblances in the chemical behavior of substances claimed to be essentially different, and upon the equally inexplicable fact that a number of the substances presented several different forms or modifications, which, for want of a better explanation, are called allotropic. The assertion, therefore, that the verification of Mr. Lockyer's alleged discovery of the essential identity of the so-called chemical elements will be subversive of the principles of chemical science, or will invalidate the grounds upon which chemical analysis and synthesis are based, is wholly unfounded. We make the assertion altogether on the merits of the case, and in the belief that it will hold good whether Mr. Lockyer's alleged discovery shall be verified or not.

The other alleged discovery to which we referred above is to be credited to Dr. William Crookes, of London, well known to the chemical world as the discoverer of thallium, who affirms the existence of "a fourth state of matter—a new world, where the corpuscular theory of light holds good, and where light does not always move in a straight line." It is scarcely necessary to add that this reputed discovery has not yet been verified in a manner to meet with general acceptance.

In *Chemical Technology* we may record, as a fact of considerable interest, that the ammonia-soda process, which was first brought to public notice at the Vienna Exhibition in 1873, where Solvay, a skillful Belgian manufacturer, exhibited the first samples as a commercial product, has fully verified the eulogistic reports of the chemical experts who reported upon it, by showing at the close of the past year an enormous growth in its production. The product obtained by this process is of extraordinary purity. It may be of interest to add in this connection that Prof. Hofmann in his report upon the chemical products exhibited at Vienna, predicted that the ammonia process of soda manufacture would in time entirely supplant the time-honored process of Leblanc.

The successful introduction in England of the manufacture of the common varieties of glass (for bottle-making and similar uses) from iron slag, by special plant erected in connection with iron furnaces, whereby the molten slag is conveyed directly from the blast-furnaces to the glass furnace, where suitable mixtures are added, is worthy of note, as an intelligent utilization of a waste product.

A novelty in this branch of manufacture which has obtained considerable popularity during the past year is the production of iridescent effects upon domestic and ornamental glass ware, in imitation of the effects manifested upon certain specimens of ancient glass. Several processes have lately been patented for this purpose; but that most successfully practiced depends upon the action of the chloride of tin upon the finished articles. The volatilization of this salt and the action of the condensed vapors upon the glass surfaces produce the desired effects.

The synthesis of indigo, which Bayer has succeeded in accomplishing, although possessing no commercial value at the present time, is still a significant and remarkable achievement, and may be regarded as setting forever at rest the ancient notion that the complex bodies (coloring principles, alkaloids, etc.) elaborated by the vital processes of the vegetable world are beyond the power of the chemist to successfully produce by artificial means.

The process of Barff for protecting iron surfaces against oxidation from atmospheric influences by subjecting the objects for a brief period to the action of superheated steam, seems from all accounts to have fully demonstrated its value. It is said to have already been extensively employed with the best results in treating gun-barrels and other fine iron work. The action of the steam covers the iron with a thin but very tenacious film of oxide of a greenish color, which lengthened exposure to the atmosphere under the most unfavorable conditions does not appear to affect.

A modification of the same process, employing highly-heated air, appears likewise to have proved its utility. Since attention has been called to these processes, the general subject of protecting metals has been much discussed in scientific circles, and the theory of Barff has been very generally indorsed as correct; and the conclusion has received general acceptance, that metallic surfaces are best protected by a film of their own oxide.

In *Telegraphy*, while nothing of marked importance occurred during the past year, it has witnessed substantial improvements in the perfecting the operation of the existing lines, and especially in increasing their capacity. The most noteworthy events in this department may be briefly summarized as follows: The extension of the quadruplex system upon additional circuits in England, where it was first introduced upon the postal telegraph system in the year 1877, with much satisfaction. The duplexing of submarine cables, by which the capacity of even long lines has been notably increased; an achievement which was successfully accomplished for the Direct Cable Company's line by Dr. Muirhead; and for the Anglo-American Company by Mr. J. B. Stearns. The successful extension of the net-work of underground lines connecting the principal cities of the German Empire. And the general improvement of the utility of the articulating telephone, which was extensively introduced; the most practical feature being the establishment of a system of telephone exchanges, by which a number of subscribers are put into communication with each other through a central office.

The wide-spread interest attracted by the *Electric Light* which was due, doubtless, primarily to the brilliant display of its capabilities in Paris, during the period of the Exhibition, may be noted as one of the important events of the year just past. But while there has doubtless been some substantial progress made in the direction of its adaptation to general uses, there appears to be no warrant for the sanguine expectations of those who have deceived themselves with the belief that the period of a general revolution in the system and practice of domestic lighting was at hand. The difficulties in the way of an economical subdivision and distribution under perfect control, which are indispensable before an electric lighting system can be expected to compete with gas-light, are of a peculiarly troublesome nature; but though we have good reasons for anticipating that the ingenuity of the eminent scientific and inventive skill now directed to this glittering problem will in time succeed in overcoming them, the improvements that have been made public during the past year have not demonstrated for it a more extended utility than has hitherto been universally accorded to it, namely, as a splendid illuminant for public buildings, factories, and large open spaces, like public squares, docks, etc., and as a signal-light in harbors, light-houses, and upon shipboard. For these and similar uses it stands confessedly without a rival. The most promising contribution in the way of adapting the electric light to domestic service that was brought out during the past year was probably the invention known as the Sawyer-Mann electric light, which, in addition to ingenious devices for controlling and distributing the electric current, has the light in the form of a glowing rod or pencil of carbon some inches in length, thus avoiding the objectionable feature of the concentrated brilliancy evolved from the usual carbon points, which the eye can not look upon without pain. The Sawyer-Mann system also provides a remedy for the trouble involved in the constant renewal of the carbons as they burned away, which the systems in vogue entailed, by inclosing the rod or pencil within an hermetically sealed tube or cylinder of glass filled with an atmosphere of nitrogen, which, being a non-supporter of combustion, permits the rod to glow, but does not consume it. This artifice, however, although heralded as new, was in reality first suggested and practically applied in the system of lamps for submarine and mining and tunneling purposes devised about the year 1873 by two Russian inventors, Messrs. Ladzguin and Kosloff, of St. Petersburg. Our technical contemporaries speak in very complimentary terms of the Sawyer-Mann system, and we shall await the record of its practical trial with interest.

Some degree of public interest was aroused also by the announcement (whether authorized or not has not transpired) that Mr. Edison, who is known as a most ingenious inventor, and who has of late made the subject of the adaptation of the electric light his special study, had succeeded in making substantial improvements; but whatever may be the nature of those alleged inventions, the public has not been favored as yet with the details.

Before taking leave of this subject, it will be well to notice, in our summary for the past year, the important scientific observation made by Professors Houston and Thomson, of Philadelphia, that the so-called "extra spark"—the brilliant flash of light which makes its appearance upon the breaking of a closed circuit—may be utilized in the production of a practically continuous light, by making and breaking the circuit so many times per second that the eye can not take cognizance of the interruptions. By this means the gentlemen named have made it possible to employ much feebler currents in the production of the electric light than have hitherto been possible. What the future utility of this interesting observation may be, remains to be seen. It may be added that these observers have suggested a form of apparatus with a vibrating pole, with which they have demonstrated the practicability of their observation, and that the observation itself has been characterized by eminent authorities as most valuable.

As being nearly related to the subject of the electric light, we may notice, in this place, a valuable contribution made by a committee of the Franklin Institute upon the comparative value of several forms of the dynamo-electric machines, upon which subject accurate data were sadly needed. The machines examined by the committee are known respectively as the Brush, the Wallace-Farmer, and the Gramme. The Siemens machine, which has been highly lauded by Prof. Tyndall, was not included in the number of those investigated by this committee—a circumstance to be regretted in view of the thoroughness with which this investigation was conducted. The results announced by the committee, briefly summarized, are as follows: The Gramme machine, considered as the medium for convert-

ing motive power into electrical current, is the most economical, giving in the arc a useful effect of 38 per cent. In this machine, also, the speed is low. The large Brush machine gave a useful effect in the arc of 31 per cent of the power employed. The speed, however, being high, there is a greater proportionate loss from friction than with the Gramme. The small Brush machine is placed next in effectiveness, utilizing 27 per cent of the power in the arc, and is credited with certain advantages of construction over the others. The Wallace-Farmer machine is placed last, showing only 14 per cent of the power utilized in the arc.

In the department of *Geography*, Capt. Burton's remarkable discoveries in the ancient land of Midian, and Prof. Nordenskiöld's brilliant efforts to demonstrate the feasibility of the Northeast passage from Europe to Siberia, China, and Western America by way of the Polar Sea and Behring Straits, are the most noteworthy events of the past year, and both promise to bear valuable results—the first in opening up a forgotten country abounding in mineral wealth, and the last in establishing a new sea route that may prove of vast importance to commerce.

In *Mineralogy*, we may report the addition of the following new species to the list of minerals, as part of last year's contribution to science:

Atopite—A new antimoniate of lime and ferric oxide, occurring in the rhodonite of Laangban, and described by Nordenskiöld. In appearance it resembles very closely a brownish garnet. Crystallization, isometric with octahedral habitus; luster, fatty; H. 5·5 to 6; sp. gr., 5·03. B.B., antimony reaction. (Name from the Greek, *atopos*, unusual.)

Barcenite—A new compound containing sulphur, mercury, and antimony, found at Huetzuco, Mexico, described by Prof. Mallett. It is black, finely granular, and often porous, opaque, with earthy luster; H. 5·5; sp. gr., 5·3. Named in honor of Prof. Barcena, the Mexican mineralogist.

Bravaisite.—A new zeolitic mineral occurring in small beds in connection with coal and bituminous shales in the coal-beds of Noyant (Dept. Allier), in France. Described by E. Mallard, and named in honor of the chemist Bravais. The mineral resembles a clay slate; but under the microscope the mass appears to consist of crystalline fibers, of parallel arrangement, with an abundant sprinkling of microscopically small particles of pyrites. Color, gray to greenish; H. 1 to 2; sp. gr., 2·6. The substance fuses readily before the blow-pipe to a white globule, and is readily attacked by acids.

Cleveite—A new uranium mineral, belonging apparently to the Spinel group, and containing, as sesquioxides, the rarer metals yttrium, erbium, cerium, and thorium (?); is found in feldspar near Arendal (Norway), and described by Prof. Nordenskiöld. The mineral closely resembles uranpecherz. Crystallization, isometric; crystals rare; occurs generally in form of grains in a brownish feldspar; color, dark; streak, brown-black; H. 5·5; sp. gr., 7·49. Occurs associated with orthite, fergusonite, thorite, calcite, uranocher, yttrogummite, and other rare minerals.

Dickinsonite—A hydrous phosphate of manganous and ferrous oxides and lime, found with other new phosphates in a vein of albitic granite, near Redding, in Fairfield County, Conn., famous for its yield of manganese phosphates. Described by Brush and Dana, Jr. Crystallization, monoclinic, tabular habitus; cleavage, basal, perfect; color, olive to grass green; luster, vitreous, on the cleavage plane pearly; transparent to translucent; H. 3·5 to 4; sp. gr., 3·338; B.B., fusible, coloring the flame green. Occurrence as above, in connection with a number of other new phosphates elsewhere described, and associated with albite, quartz, microline, a damourite-like substance, apatite, garnet, tourmaline, and staurolite. The new phosphates filled out nest-like cavities in the albite.

Dietrichite—A zinc-alumina alum, found at Felsöbanya, Hungary. Described by Von Schroeckinger, and named in honor of the chemist, Dietrich. Occurs in masses. Color, impure white to brown yellow; luster, silky; H. 2·1; taste, vitriolic; soluble in water; B.B., fusible.

Duporthite—A new mineral, allied to asbestos, occurring at Duporth, near St. Austell, in Cornwall (whence the name), and described by Collins. Occurs in fibrous masses, filling out crevices in serpentine. H. 2; sp. gr., 2·78; color greenish to brownish green; silky luster; fibers flexible; in tube yields water; fine fibers fusible to block glass; insoluble in hydrochloric acid.

Ekdemite—Composition arsenite of lead and chloride of lead. Occurs at Laangban, and is described by Nordenskiöld. Coarsely crystalline; light yellow to greenish; cleavage distinct; luster on cleavage plane, glassy; H. 2·5 to 3; sp. gr., 7·14; B.B., lead and arsenic reaction; the latter also in Marsh apparatus.

Eosphorite—A hydrous phosphate of alumina and manganese, from Redding, Fairfield County, Conn. Described by Brush and Dana. Crystals, orthorhombic; color, rosy red to grayish or white; luster, vitreous; transparent to translucent; H. = 5; sp. gr. = 3·134. Occurrence same as Dickinsonite.

Eukrasite—Occurs on one of the small islands in the Brerigsfiord, and is described by Paijkull before the Geological Society of Stockholm. Supposed to be the same mineral formerly described as Polykras, by Breithaupt; as Torite, by Von Brevig; both of which Möller held to be identical with Polymignite. Composition highly complex.

Friseite—A new sulphide of silver and iron, found at Joachimsthal, Bohemia, and described by (query ?). It comes in dark-brown orthorhombic crystals, with basal cleavage; translucent and sectile; H 2 to 3; sp. gr., 4·217. Closely related to Sternbergite. The propriety of making this species is considered doubtful by Dana, Jr.

Ganomalite—The mineral known by this name is affirmed by Nordenskiöld to be tephroite. The true ganomalite occurs at Laangban, and is an anhydrous lead, manganous silicate, while the mineral tephroite, which it closely resembles, contains no lead, and is infusible.

Hibberite—A new hydrous carbonate of lime, magnesia, and iron, found at Unst, one of the Shetland Islands, and described by Heddle. A loose powder, of lemon-yellow color, covering purple kammerite.

Hullite—A soft, velvet-black mineral of waxy luster, filling out cavities in basalt, near Belfast, Ireland. Described by Hardman. Allied in composition to delessite.

Hyalotekite—An anhydrous silicate of lead and baryta, resembling a grayish-white feldspar, and occurring with hedgphan and schefferite at Laangban. Described by Nordenskiöld as crystalline masses with two cleavages at nearly 90°; H., 5 to 5·5; sp. gr., 3·81; luster, fatty to glassy; color, white to gray; semi-translucent; brittle; B.B., fusible; in reduction flame turns black from reduced lead; insoluble in hydrochloric and sulphuric acids; decomposed by fusion with soda.

Hydrocerussite—A hydrous carbonate of lead, found at Laangban, surrounding native lead. Described by Nordenskiöld as white to colorless. Crystallization, dimetric (?). Decrepitates, and to B.B. yields lead. Soluble in acids.

Ionite—An earthy ocherous substance of brownish-yellow color, found in the argillaceous lignite of Ione Valley, Amador County, Cal. Described by S. Purnell. It is a hydrocarbon, carrying some 13 per cent of clay as impurity. Sp. gr., ·9; melts to a pitch-like mass, which burns with much smoke and with aromatic odor; resembles the pyropissite of Kengott; insoluble in petroleums; imperfectly soluble in alcohol or ether, but completely soluble in chloroform.

Jakobsite.—A new mineral of the Spinel group, found at Laangban, and described by Nordenskiöld. Its chemical formula is $MnO(Fe_2O_3,Mn_2O_3)$. The mineral resembles magnetic iron, and is strongly magnetic.

Leidyite—A new zeolite found at Leiperville, Delaware County, Pa., on the surface of schistose rock. Described by Koenig. Generally found upon garnet or zoisite. Not crystallized, but in rounded and kidney-shaped forms, covering these minerals; when in cavities, it appears stalactitic. Color, grass-green or olive-green to greenish-gray; streak, white; luster, waxy; H. 1; B.B., fusible to a yellowish-green glass; in test-tube, yields water; readily soluble in hydrochloric acid.

Lithiophilite—An anhydrous phosphate of manganous oxide and lithia; found at Redding, Fairfield County, Conn., and described by Brush and Dana. Crystalline masses, showing three cleavage planes, but no distinct crystals. Color, honey to brownish-yellow; luster, vitreous to fatty; translucent; H. 4·5; sp. gr., 3·424; B.B., easily fusible, coloring the flame decidedly red; soluble in acids. Occurrence same as Dickinsonite.

Monimolite—Resembles atopite, but contains lead and a lower percentage of antimonic acid. Described by Nordenskiöld, and occurs at Laangban.

Pandermite—A new hydrous borate of lime occurring at Panderma, on the Black Sea, and described by G. vom Rath. It resembles a snow-white, finely crystalline marble. Appears to stand nearest to borocalcite.

Protovermiculite—A new vermiculite-like mineral, found in large grayish-green folia, at Magnet Cove, Ark. Described by Koenig. Luster, sub-metallic; G., 2·269. A silicate of alumina and ferric oxide.

Pseudobrookite—A new species of titanic iron, dimorphous with ilmenite, found at the Aranyer-berg in Siebenbürgen. Described by A. Koch. Crystallization, orthorhombic, of tabular habitus, with brachydiagonal cleavage; color, dark-brown to iron-black; H. 6; sp. gr., 4·98; streak, ocher-yellow; luster, metallic-adamantine; B.B., infusible. Soluble in concentrated sulphuric acid. Occurs in the crevices of an augitic-andesite, with hornblende and tridymite.

Reddingite—A hydrous phosphate of manganese found at Redding, Fairfield County, Conn. Described by Brush and Dana. Crystals, orthorhombic; very small; color, rose-red to yellowish; luster, vitreous; transparent to translucent; H. 3 to 3·5; sp. gr., 3·10; B.B., fusible, coloring the flame green; soluble in acids. The mineral is intimately mixed with quartz. Occurrence same as Dickinsonite. Name from locality where found.

Stützite—A telluride of silver found at Nagyag (?), Transylvania, and described by Schrauf. Crystals of lead-gray color, highly modified, and probably monoclinic.

Szaboite—An anhydrous silicate of ferric oxide, found in association with pseudobrookite, as above. Described by Koch. Crystallization, triclinic; crystals very small; color, brown; streak, copper-red; luster, vitreous; H. 6; sp. gr., 3·505; opaque to translucent; slightly dichroic; B.B., infusible; in fine powder, soluble in conc. sulphuric acid.

Thaumasite—A new species, composition not at hand, save that it contains silicic, sulphuric, and carbonic acids. Described by Nordenskiöld from the Bjelke mine, at Areskustan (Sweden).

Triploidite—A hydrous phosphate of manganous and ferrous oxide, found at Redding, Fairfield County, Conn. Described by Brush and Dana. Crystallization, monoclinic; color, white, reddish-brown, wine-yellow; luster, vitreous; transparent to translucent; H. = 4 to 5; sp. gr. = 3·697; B.B., fusible, tingeing the flame green, soluble in acid. Related to triplite, whence the name. Occurrence same as Dickinsonite.

Vermicellite.—A new species, allied to vermiculite (whence the name); found near Barrow-in-Furness, England, and described by Manby.

Yttrogummite.—Occurrence same as cleveite (see *ante*). Described by Nordenskiöld, and by him regarded as a well-characterized species, resulting from the decomposition of cleveite. Color, black to yellow; pitchy luster; translucent; H. 5; cleavage, scaly; contains water, oxide of uranium, and yttria.

In *Engineering*, the year just past can scarcely be said to have afforded much matter of interest; for beyond the progress made upon a number of important works of improvement, and the completion of a few others, there is but little to notice, and even that little has been so fully reported at length in the columns of the JOURNAL during the year, that a brief mention in this place will suffice. The only specially novel engineering undertaking to be recorded is the successful transfer of the Cleopatra Obelisk from Egypt to England—to its present site on the Thames embankment in London. The engineering skill displayed in this work by the contractors has been highly praised by the leading professional journals of England, and appears to be deserved. The practical completion of the great Sutro Tunnel was by all odds the most interesting and important performance in this department in the United States during the year, and this enterprise will be found described in full detail in our last volume. The improvement works at the mouth of the Mississippi do not appear to realize the sanguine expectations and predictions of their projector to the extent that his many warm advocates had hoped. It would, however, be premature to pass judgment at this time upon the merits of the controversy that is known to exist between Capt. Eads and the U. S. Engineering Department, on which our readers are generally informed.

The partial completion and practical introduction of an elaborate system of elevated street railways, in New York City, is an event of special interest, and, though some serious objections have been found against them, their utility in solving the problem of rapid transit is generally admitted.

The canal across the American Isthmus attracted considerable attention at the scientific congresses assembled in Paris during the late Exposition, and the results of the several explorations, just made under the direction of the French naval officer, Lieut. Wyse, for a route across the Darien Isthmus, enjoyed special prominence. The periodical sending out of expeditions to survey ground that has been already surveyed and resurveyed in the hope of finding some passage across this troublesome neck of land, that may, perchance, have escaped the observation of previous expeditions, might as well be stopped before the performance becomes farcical. Our own engineers have explored every ridge, valley, and stream along the whole isthmus from Panama to the Gulf of San Blas; and their reports, which are full and exhaustive, fully confirm Trautwine's conclusions, that a canal across the isthmus at the narrowest point, from the Gulf of San Miguel to the Gulf of San Blas, with a tunnel of ten miles in length, at a cost of $300,000,000, is the best that can be done in a region where nature has interposed so many obstacles. Whether so stupendous a work will ever be undertaken by private capital and enterprise may well be doubted, and the prediction may, we believe, be safely made that the interoceanic canal across the American Isthmus, if ever accomplished, will be done by the united efforts of the leading commercial nations of the world, in the interest of the world's commerce and of civilization. *Verbum sap.*

The Cape Cod Ship-Canal, a project that has been periodically agitated for a century and a half, found an able champion, last year, in Mr. Clemens Herschell; and several schemes for the construction of a direct water-way across the peninsula of Florida were brought forward more or less prominently.

Regarding the Channel tunnel to connect England and France, the reclamation of the Zuyder Zee, and the flooding of the Sahara, brilliant projects that have attracted more or less attention on the part of the engineering world for several years past, nothing has been done beyond the regulation amount of discussion. The St. Gothard Tunnel, the greatest engineering work at present under way in Europe, met with a serious set-back, last year, by the refusal of the Swiss cantons to vote the surplus of subsidy which the unforeseen expensiveness of the work has rendered it necessary to provide. The difficulty, however, appears to have been satisfactorily adjusted.

In *Mechanics*, we have nothing of special importance to report to the credit of the past year.

UTAH MINES.

Special Correspondence of the Engineering and Mining Journal.

THE STEWART MILL.

The Stewart mill has now been running sixty days on the gold ores of the Stewart mine. The second clean-up was made December 31st, 1878. The product was a gold brick weighing 495 ounces, valued at $9033.75. The capacity of the mill has been increased by the addition of ten more stamps. The revenue of the mine will now be more than doubled. The mill is located at the base of the mountain, about one hundred yards below the mine. The ore is easily and cheaply extracted, and has only to be wheeled out of the levels in cars and dumped into a chute and conveyed to the mill.

THE DEER TRAIL DISTRICT.

A new district was organized about the last of August, 1878, in Beaver County, Utah. It is situated on the eastern slope of Baldy Mountain, the highest peak of the Wahsatch range. The first discovery was a ledge of silver-lead ore, about five feet wide at the outcrop. It was named the "Deer Trail" ledge. Work was immediately commenced, and a shaft was sunk to the depth of fifty feet on the ledge. The ore increased in richness and the vein in width as depth was obtained. Thirty tons of ore have been shipped from the mine to Salt Lake City during the last sixty days. The ore has been bought by B. W. Morgan at an average price of $260 per ton. The ore is gray carbonates, carrying about 150 ounces silver, 45 per cent lead, and $40 gold.

The ledge is traceable for several miles toward an old district that was located some ten years ago, but now nearly abandoned. The name of the district is the Ohio. A large amount of work was done in this district on the "Bully Boy" and Webster mines. Machinery, etc., was erected by a San Francisco company. The mines were developed to a considerable extent, and a large quantity of good ore was extracted and reduced in the works. On account of this new discovery, work will shortly be resumed in the Ohio District. The location of the Deer Trail ledge was made by John Fullmer and Joseph Smith. About $2000 worth of work has been done on the ledge in prospecting along the outcroppings with good success. The foot-wall is quartzite, the hanging wall limestone. The strike is northeast and southwest. There is an abundance of water and heavy pine timber in the district.

GRANITE DISTRICT.

There has also been a strike in Granite District, twelve miles east of Beaver City, Utah. William Davis, an old and heretofore an unlucky miner, has at last been rewarded for his labor. The ledge is known by the title of the Crazy Davis claim. At a depth of 35 feet he struck an ore-bearing ledge four feet in width, carrying silver, gold, lead, and iron. Assays show a value of $80 in gold per ton, $10 in silver, 40 per cent lead, and a small percentage of iron. The Paddy Hope mine in this district is being worked with good results. A shaft has been sunk on the ledge fifty feet deep, showing ore all the way, assaying from 40 to 60 ounces silver and $40 in gold per ton. Some of the mines in this district contain a great deal of bismuth. The new strikes will doubtless draw some attention to a valuable district that has long remained idle for want of capital to develop its mines.

Another rich discovery in the sandstone formation of Southern Utah is reported. Samples of the ore have been received here that show an assay value of 400 ounces in silver per ton. The fortunate proprietor states that the ledge from which this sample was taken shows a vein of ore twenty feet thick. The character of the ore is chloride of silver. It is so soft that it can be readily mined with a shovel and pick.

The exact location of this discovery is not yet known. The report, however, is exciting numbers of miners, who are leaving for the new bonanzas every day from different portions of the territory. ARCHIBALD.

SILVER CLIFF.

Special Correspondence of the Engineering and Mining Journal.

Hardscrabble District is suffering severely from the weather this winter. Heavy snows fell as early as November, and continued until Christmas, when the whole region was covered more than 10 inches deep, thus cutting off all surface work. Prospecting about Silver Cliff and Rosita has thus been seriously impeded, if not entirely discontinued. The Plata Verde mine, under cover, is working with encouraging results. The King of the Valley, also under cover, has continued steadily, and is producing as before. Upon the Racine Boy the works are still unprotected, and in consequence are under dictations of the weather. This is the case with several other prospects. About Rosita, the Humboldt mine is now down beyond 500 feet in its principal shaft, having come into syenitic country rock. The vein is pinched up and seems to have suffered from severe disturbances. The Leavenwerth mine is being worked very satisfactorily by the new owner. The Lucille mine, east of the Humboldt, is steadily worked under lease by V. B. Hoyt, and produces its regular quota of rich ores. This vein carries from one to four inches of galena very rich in silver, some of the ore running as high as 1000 ounces. The average yield of the vein at the mill is 275 ounces per ton. This vein is now discovered and opened for 8000 feet, in the Columbus, Royal Gem, Lucille, and to N. W. in the Cosmos claims, and shows the same condition, ores, and gangue in all its openings. It is a very fine vein, and, consolidated, would make a splendid piece of mining property.

The Maine or Bassick mine is still, on account of the establishment of hoisting and pumping works at the juncture of the Maine shaft and west tunnel, 180 feet below the discovery on Gold Hill. There is the same rich ore in the shaft's floor as was found elsewhere in this rich gold cave. When the machinery is in working order, the further workings of this mine will prove it up within the next 12 months. The Ben Franklin mine, some 3000 feet W. S. W. from the Bassick mine, is beginning to develop itself into a rich property. Blende ores have been struck which carry 1065 ounces of silver to the ton, and a 2½-foot wide pay-vein of such stuff has been opened, thus promising a good hoist of pay. In the Bunker Hill mine, at 60 feet depth, a pay-vein of ten inches, carrying 44 per cent of lead, 6 of copper, 20 ounces of silver, and $5 of gold, per ton has been opened, with promises of enlargement. This vein has not developed its hanging wall yet, but carried a syenite foot-wall for the last 30 feet downward at a south dip of about 20 degrees from the perpendicular. This mine offers a good inducement to some energetic lead-smelter. A furnace established at this point would pay well, as the location is favorable as regards water and fuel, and the supply of lead ores in sight is large, the Four Ace, King, Shetland, and other lead-bearing properties being in its immediate vicinity. The ores are galena, with iron and copper pyrites in clay gangue, here and there showing but slight signs of light-colored zinc blende. The Bunker Hill mine is located between the Bassick mine and the Silver Cliff deposits, and its course or strike bears to both, thus seemingly indicating a connecting link. The same float rock is found here as at Bassick's mine and the Silver Cliff deposits. The Rosita part of the district has never had so good an outlook as it has at the present date. One or two more works for the metallurgical workings of the ores of the district would put the same upon a prosperous footing. SILVER CLIFF.

ON THE DISTRIBUTION OF CARBON AND MANGANESE IN CRUCIBLE-PLATE STEEL.

By Sergius Kern, M.E., St. Petersburg.

The author executed some experiments in this way, the results of which may be of some interest. The analysis show a notable difference in the percentage of carbon and manganese in various places of the plate. The size of the plate was 4′×4′×¼″ and it was cut into strips as shown on the figure:

0·24 C. 0·14 Mn.	0·25 C. 0·11 Mn.	0·26 C. 0·11 Mn.	0·26 C. 0·10 Mn.
0·26 C. 0·14 Mn.	0·26 C. 0·13 Mn.	0·27 C. 0·12 Mn.	0·23 C. 0·10 Mn.
0·25 C. 0·14 Mn.	0·24 C. 0·15 Mn.	0·22 C. 0·13 Mn.	0·26 C. 0·12 Mn.
0·25 C. 0·12 Mn.	0·26 C. 0·14 Mn.	0·28 C. 0·14 Mn.	0·26 C. 0·10 Mn.
0·29 C. 0·13 Mn.	0·28 C. 0·12 Mn.	0·29 C. 0·10 Mn.	0·28 C. 0·14 Mn.

In Bessemer steel plates such remarkable fluctuations of the percentage of carbon and manganese can not be remarked, certainly owing to the great uniformity of this metal.

NEVADA MINING NOTES.

Special Correspondence of the Engineering and Mining Journal.

There is a general belief out here that there will be a deal in North Bonanza and Flowery after the assessment is off, and before the end of February parties think insiders want to make up what the panic spoilt for them. I hear some well-informed parties think Grand Prize won't be able to handle the water much longer, and that insiders knowing it causes the decline in the stock.

Sierra Nevada, from what I can learn, and from what I saw some time ago (I can't get in now), is worth what it is quoted at, but I don't look for a material rise in that stock before May to August. I have faith in it. Ophir may be free from assessments for twelve months; but I doubt the divvies.

Eureka is said to be in trouble. The ore-supply is said to be *very* shor

and a rumor is out among the knowing ones at Eureka, that Mr. Donnelly, the superintendent, will resign the 1st of February, and his foreman also, should no new ore be struck before that time. It is not yet positive; but shows the probable cause for the low quotation for this stock. Of course, should another ore-pocket be found, it would change matters immediately. C.

ELECTRIC BREVITIES.

LONDON, January 15.—Edison's first patent for the electric light was sealed yesterday. It is the same which was unsuccessfully opposed by Russell. Edison has two other applications for patents pending, which are not yet sealed.

THE WESTERN ELECTRIC LIGHT CO.—This company filed articles of incorporation in San Francisco on the 7th inst., with a capital stock of $5,000,000. Among the incorporators we note many prominent names. This company has secured all of the really valuable inventions before the public, including the generators of Gramme, Paris, Siemens, London, and the electric candles and lamps of Jablochkoff, Werdemann and Siemens.

The *Stock Report* says: "A number of machines brought to New York by Mr. Latham upon his recent return from Europe, have been turned over to the company and are now *en route* for this city. In a few weeks the public will be afforded an opportunity of witnessing the practical operation of the lights which are being used so successfully in Paris and London."

A NEW ELECTRIC LIGHT.—Another form of electric light has been added to the many recently devised within the past few months. The inventor is Mr. N. H. Bruce, of Troy, N. Y. The machine is simple, not exceeding five pounds in weight, and possesses at least one novel feature. The *Troy Times* gives this description of the apparatus: "On a circular stand, partly wood and partly brass, are mounted two small posts, eighteen and twenty inches in height. From these, two arms project toward each other for the support of a carbon candle. Outside of the longer post is a brass tube between one and two inches in diameter, and twelve inches long. Within it is a weight two inches long, which is made to follow the sand, with which the tube is filled, as it runs out of a small orifice at the bottom. As the sand goes out, the weight, sinking with a low and regular movement, raises, by means of a cord and pulley, a second carbon candle in such a way that the upper end is in close proximity constantly with the lower end of the upper carbon candle. Wires close the circuit between the carbons, and a powerful dynamo-electric machine supplies the current. By means of a little contrivance the size of the opening for the outflow of the sand may be increased or diminished at pleasure. The carbons give out a steady, brilliant light, equal to 1500 candles, last seven hours, and may be obtained for $8 a hundred. The inventor designs his light for the illumination of parks, streets, and for coast service only."

NOTES.

THE NEW CHOLLAR-POTOSI PUMPS.—These pumps consist of double columns of 15-inch plungers. The rods with which these are to be worked are 14 × 14, each stick being of Oregon pine and 100 feet in length. They are locked together and held by plates 10 inches wide and one inch thick. The motive power is a compound, condensing, direct-acting engine, of 700 horse-power, the initial cylinder being 10 feet 10 inches long, by 32 inches in diameter; the expansion cylinder being 8 feet long and 65 inches in diameter.

MONONGAHELA NAVIGATION COMPANY—ANNUAL REPORT.—At the recent annual meeting of the stockholders of this company in Pittsburg, B. L. Wood, the cargo inspector, submitted the following report of the business transacted during 1878:

The toll receipts on the Monongahela slack-water during the year from coal and slack were $125,373.43; coke, $8330.24; freight brought by crafts, steamboats, tow-boats, lumber, etc., $64,542.98; passengers, $5250.-65. Total receipts, $203,497.30.

During the year there were 69,938,255 bushels of coal, coke, and slack shipped in the several pools, the total amount being divided as follows:

Pool No. 1	12,237,465
Pool No. 2	34,263,450
Pool No. 3	11,336,100
Pool No. 4	12,101,240

Comparison of the coke business for 1877 and 1878:

	1877.	1878.	Decrease.
Total number of bushels	79,480,918	76,825,255	2,655,663
Tolls on coal and coke	14,929,209	13,370,367	1,558,840

FRIGHTFUL COLLIERY EXPLOSION IN WALES.—CARDIFF, January 14.—An explosion in the Dinas Colliery, in the Rhondda Valley, last night, is believed to have killed about sixty persons. The greatest excitement prevails in Pontypridd and the neighborhood. The Dinas pit is opposite Pandy Station, on the Pontypridd & Treherbert Railway. The district is densely populated. It is said that there are fifty-eight men in the pit. The explosion was very violent, and it is feared that none of the men escaped. The bottom of the shaft is temporarily impassable. No attempt at rescue can be made yet.

A dispatch dated London, Wednesday, January 15th, 1879, says: "There has been no communication yet with the entombed colliers in the Dinas mine. Eighty yards of the roof at the bottom of the shaft have fallen since the explosion, rendering ventilation impossible, and explorers can not enter the mine. Experts say that only by the barest possibility can any of the sixty men be alive, and give no hope of their rescue."

GENERAL MINING NEWS.

COLORADO.

RECORD OF A QUARTZ MILL.

The Miller quartz mill has been for many years one of the most reliable and popular among the custom mills of Black Hawk. It contains twenty-five stamps, and, as usual, lost as few days for repairs as any in the country. It crushed 896¼ cords, or 6273 tons, of ore in 1878, from which just about 4000 ounces of retort gold were obtained. Allowing an average value of $16 per ounce, the total out-put of the mill for the year was $64,000.

All the property of the Chicago and New York Mining and Smelting Company, including valuable mines and extensive smelting works at Holland, in Park County, will be sold under a decree of the District Court, at Fairplay, February 6th.

DAKOTA.

THE BLACK HILLS.—The *Deadwood Pioneer*, in speaking of the Rochford District, says: "The principal working mines are the Stand-By, now bonded to California parties; the Montana, the Gibraltar, the Oro Cache, and the Great Eastern. Each of these mines is being developed very intelligently and speedily, the Stand-by being the furthest advanced.

"The Rochford belt of mines extends from northwest to southeast, and occupies a succession of prominent hills adjacent to the Little Rapid Creek. The formation is of granite and slate, and is very pronounced in character. All of the principal veins being worked are wide and strong, and show ore free from base and easy of reduction. The entire district is emphatically low grade, the highest estimate of milling results being from $8 to $10 per ton; but the ore is in abundance, and should it average even $7 per ton, the future of the district as a mining center is fully assured. Two tests by mortar and pan from the Stand-By gave a result of about $9 per ton. This from a vein of fifty feet in width is a fine prospect, and the appearance of the ore-body is very uniform. Some 500 tons of ore are now on the dump ready for milling.

"The Gibraltar takes in a prominent eminence lying directly in line with the Stand-By and Montana, and about midway between the two. The float of the ledge prospects about $7 per ton and the croppings extend over the entire location. A short tunnel is being driven in to tap the vein from the west side of the hill, and when reached a shaft will be sunk directly on the ore-body for one hundred feet. The location is one of the most promising in the district.

"The Montana is being worked by a tunnel, and shows a good body of ore.

"The Little Rapid presents an abundance of cheap water-power for milling ores, and is in itself of great value to the district. The entire country is staked; some persons claiming as many as twenty-five locations, but there seems to be a good feeling among the locators and peace is the rule. The town of Rochford contains about fifty well-built cabins, two stores, blacksmith shop, butcher shop, two corrals, and one or two saloons. The site of the town extends along the narrow valley of the Little Rapid and takes in also the narrower valley of Irish Creek. Rochford is 24 miles from Deadwood.

"Some of the richest placer deposits ever discovered in the Black Hills have recently been discovered about a mile and a half above Custer City, in what is called Last Chance Bar. The pay streak, however, is of limited extent, being about 900 feet in length, with an average breadth of 150 feet, and the ground is all owned by one company. Four men took out $70 in a day, wheeling their dirt for washing 400 yards. The gold is very coarse, nuggets being frequently found that weigh fifty cents.

"The Evangeline mine has been bonded by San Francisco parties for $40,000."

MICHIGAN.

THE OUTPUT OF THE LAKE SUPERIOR IRON MINES FOR 1878.

From the Marquette *Mining Journal* of the 11th inst. we take the following figures, showing the product of the iron mines and furnaces of the Lake Superior region for the year 1878:

Name of Mine.	Ore, Gross Tons.	Value.
Republic	176,221	$1,145,436.50
Cleveland	143,420	896,375.00
Lake Superior	109,674	685,462.50
Jackson	83,121	519,506.25
Champion	73,464	459,150.00
Saginaw	54,097	338,106.25
Michigamme	58,622	366,387.50
Salisbury	32,155	208,620.00
Vulcan	38,799	155,196.00
McComber	30,180	120,720.00
Rolling Mill	30,773	123,092.00
Pbg. & L. Ang	28,161	176,006.25
Barnum	26,680	166,750.00
Quinnesec	29,925	119,700.00
Humboldt	23,920	149,500.00
Winthrop	23,740	94,960.00
New York	21,903	136,893.75
Smith	16,924	67,696.00
Emmett	11,523	46,092.00
Edwards	10,351	64,693.75
Cleveland Hem	9,317	37,268.00
Norway	7,276	29,104.00
Bessemer	8,506	34,024.00
Goodrich	7,547	47,168.75
Cyclops	6,028	24,112.00
Keystone	5,401	33,756.25
Palmer	4,704	29,400.00
Breen	4,694	18,776.00
Marquette	4,596	28,725.00
Mitchell	4,259	17,036.00
National	4,191	26,193.75
New York Hem	4,547	18,188.00
Cambria	3,754	15,016.00
Pendill	3,385	13,540.00
Spurr	2,217	13,856.25
Manganese	2,093	8,372.00
Steward	1,690	10,562.50
Howe	1,225	7,656.25
Morgan	10	40.00
Total tons and value	1,125,093	$6,449,332.00

The following is a statement of the pig-iron shipped from the Lake Superior furnaces in 1878, together with the value:

Name of furnace.	Gross tons.	Value.
Carp River	4,142	$103,550
Pioneer	6,162	154,050
Fayette (estimated)	6,000	150,000
Menominee (estimated)	1,000	25,000
Iron Cliffs	100	2,500
Total	17,404	$435,100

The following is a statement in gross tons of the aggregate product of the mines and furnaces for each year since 1856, together with the value of the same:

YEARS.	Ore	Pig.	Ore and pig.	Value.
1856*	52,000	.....	52,000	$156,000
1857	21,000	.....	21,000	63,000
1858	31,035	1,629	32,664	249,202
1859	65,679	7,258	72,937	575,529
1860	116,908	5,660	122,568	736,498
1861	114,258	7,970	122,228	775,832
1862	115,721	8,590	124,311	984,977
1863	185,257	9,813	195,070	1,416,935
1864	235,123	13,620	248,743	1,897,215
1865	196,256	12,283	208,539	1,590,430
1866	296,972	18,437	315,409	2,405,960
1867	466,076	30,211	496,287	3,475,820
1868	507,813	38,246	546,059	3,992,413
1869	633,238	39,003	672,241	4,968,435
1870	856,471	49,298	905,769	6,300,170
1871	813,379	51,225	864,604	6,115,895
1872	952,055	61,195	1,013,250	9,188,055
1873	1,167,379	70,507	1,237,886	11,395,887
1874	935,488	86,494	1,021,982	7,592,811
1875	910,840	81,753	992,593	5,788,763
1876	977,233	61,911	1,039,144	5,397,785
1877	960,982	29,685	990,667	4,299,598
1878	1,125,093	17,404	1,192,497	6,884,432
	11,736,256	702,192	12,438,448	$86,221,604

* 1856, and previous.

NEVADA.

THE COMSTOCK.

From the *Gold Hill News* of the 8th inst., we condense the following:

"In the mines everywhere the work of development is being forwarded with all the speed and dispatch possible, and in more than one mine with prospects

that are liable to develop into propositions of paying ore long before the coming summer is over.

"Sinking the Sierra Nevada winze affords no new features for the week, the same regular and favorable stratification being shown as the winze progresses downward.

"Ophir and Mexican are sending out their prospecting drifts on both the 2100 and 2200 levels, with indications that predicate the best of future results.

"The lightning drift of the Hale & Norcross will connect with the Combination drift in a couple of days more. After that, it will probably take some time to get every thing in readiness, when it will take but a very short time to rid the flooded mines of water aud give a chance to get at and develop the really fine ore prospects known to exist on the lower levels of both the Savage and Hale & Norcross mines.

"The California has declared its monthly dividend of $1 per share, aggregating $540,000.

"At the new joint Gould & Curry shaft, the flow of water is again very strong, being all that the small donkey-pumps, run by compressed air, can handle. The flow of water in the Julia is still strong and very hot, so that but little progress can be made in the development of the new ore prospects recently uncovered in the southwest drift on the 2000 level of that mine.

"In the Silver Hill the east drift on the 1100 level must cut the main ore-vein in a very short time. The same lively developments may be looked for in that quarter.

"The Belcher will resume sinking their main incline below the 2560 level for the purpose of opening the mine at a still greater depth."

NEW PATENTS.

The following is a list of the new inventions relating to Iron, Coal, Mining Machinery, Chemical Apparatus, and the treating of Precious Metals, etc., from *The Official Gazette of the United States Patent Office*, for the week ending December 17th, 1878:

No. of Patent.	*Title of Invention.*	*Name of Inventor.*	*Residence.*
210,832	Steam-Blower	Robert Atherton (a)	Paterson, N. J.
210,834	Lime and other Kilns	Johann Baldermann(b).	Finkenheerd, Prussia.
210,835	Galvanic Battery	F. C. Bartlett	New York, N. Y.
210,840	Method of Utilizing Bisulphide of Carbon as a Motive-Power	Robert Creusbaur	Brooklyn, N. Y.
210,841	Rotary Water-Meter	William H. Cusack	Nashville, Tenn.
210,843	Feed-Water Regulator	George Dinkel	Jersey City, N. J.
210,846	Feed-Water Heater for Steam-Boilers	Benjamin Ford	Un'n T'nship, Pa.
210,850	Hoisting-Machine	Leonard H. Hall	Erie, Pa.
210,851	Clips for Rope Tramways	A. S. Hallidie	S. Francisco, Cal.
210,854	Throttle-Valve for Steam-Engine	William J. Innis	Oil City, Pa.
210,864	Testing Bridges	Louis Laubscher	F't Wayne, Ind.
210,890	Printing Telegraph	George L. Anders (c)	Boston, Mass.
210,891	" " "	"	" "
210,892	" " "	"	" "
210,893	" " "	"	" "
210,894	" " "	"	" "
210,895	" " "	"	" "
210,896	" " "	"	" "
210,897	Transmitter for Printing-Telegraph	"	" "
210,898	Oscillating Water-Meter	Jared A. Ayres	Mystic R'r, Conn.
210,915	Compound Hydraulic Engine	O. C. Carpenter (d)	Brooklyn, N. Y.
210,954	Injector for Steam-Boiler	Daniel Minich	Philadelphia, Pa.
210,990	Process of Welding Copper	James Burns (e)	Verona, Pa.
211,022	Rock-Drill	Thomas B. Jordan	London, Eng.
211,055	Apparatus for Separating Refined Petroleum into Oils of Different Grades and Fire-Tests	Davenport Rogers	Galion, Ohio.
211,058	Steam-Generator	Jacob Schofield	Newton, Iowa.
211,062	Air-Compressing Apparatus	T. G. Springer	New York, N. Y.
211,070	Manufacture of Metallic Nickel	Edward Weston	Newark, N. J.

(a) Assignor of ½ his right to Will Hague, same place.
(b) " to himself and Paul Berndt, Fuerstenberg, Prussia.
(c) " to E. Baker Welch, Cambridge, Mass.
(d) " to Robert Farley, Jr., New York.
(e) " of ½ his right to Peter L. Bannen, same place.

The Canadians as Inventors.—The *Monetary Times* says: "Material progress is not the only kind of advance Canada is making. In inventive ingenuity she has a respectable record, as her patent statistics show. In 1855, but ninety-two patents were granted in Canada; in 1869 there were 781, and in 1876 there were 1548. Of these Canadians secured no mean share:

	Canadian patentees.	Other countries.
1874	528	721
1875	521	797
1877	533	820

"There was a time when, foreign inventions being refused patents in Canada, many of them came out in the names of Canadians; but there is no longer any motive for this evasion, and we take it for granted that all the patents obtained in the names of Canadians are what they profess to be, Canadian inventions. This inventive ingenuity aids material progress. And referring to the display made by Canada at the Paris Exposition, a French critic states, amid much more of a laudatory character: 'It is abundantly evident that, as regards public education, Canada stands in the very front rank of all exhibitors.'"

PROPOSALS.

For the benefit of many of our readers, we compile weekly such proposals and solicitations for contracts, etc., as may be of interest. The table indicates the character of proposals wanted, the full name and address of parties soliciting, and the latest date at which they will be received:

Rostrums; A. F. Rockwell, Capt. and A. Q. M., U. S. A., Washington, D. C.	Jan. 20, 1879.
Dredging at Rock Island Rapids, Ill.; F. U. Farquhar, Major of Engineers, Rock Island, Ill.	" 22, "
Cast-Iron Water-Pipe, 11,000 feet, 36 inch; W. H. Perry, Water-Works Committee, Nashville, Tenn.	" 25, "
Army Transportation; Charles H. Tompkins, Deputy Q. M. Gen., U. S. A., St. Paul, Minn.	Feb. 10, "
Monument—Granite and Bronze; M. Nichols, Chairman Monument Committee, Buffalo, N. Y.	March 1, "
Gas Illumination of Rio de Janeiro, Brazil; Salvador de Mendonca, Brazilian Consul-General, 42 Broadway, New York City	" "
Locks and Keys for Mail Bags; P. M. Key, Postmaster-General, Washington, D. C.	" 20, "
Coal for Schools of Youngstown Board of Education, Youngstown, O.	" 29, "
Railroad Grading; P. Bremond, President of the Houston, East & West Texas Railway, Houston, Tex.	

The Westchester & Philadelphia Railroad Company is about to construct three iron bridges along its line, the material having already been delivered.

The Town Trustees of Golden, Colo., are in correspondence with Messrs. Russell & Alexander, contractors, of Colorado Springs, relative to the construction of water-works in Golden.

A contract is reported to have been entered into between certain French capitalists and a prominent engineer of Cincinnati, for the purpose of constructing a narrow-gauge railroad from Jerusalem to Jaffa in Palestine, a distance of about forty miles. The work, it is expected, will begin very soon, and will be pushed as rapidly as possible.

Proposed Railway Communication with Mexico.—WASHINGTON, Jan. 15.—Mr. Phillips, of Kansas, has presented to the House a proposition to open railway communication between the United States and Mexico, and especially urging that a survey of a road by the Secretary of War from Austin, Texas, to Toplovampa Bay, in the Gulf of California, shall be made. Among the documents submitted, and which give a complete history of the measure, accompanied by tables of imports and exports between the United States and Mexico from 1825 to 1878, are the views of the Mexican Minister, Señor Zamacona, upon the subject, given in reply to a letter of inquiry from Mr. Phillips as to whether such a survey at this time would be welcomed by the government of his country. Señor Zamacona says: "I am inclined to the conviction that the Mexican government will be willing to contribute to the undertaking of and to the successful carrying out of a scientific expedition of the aforementioned districts."

The Philadelphia Water Supply.—At a meeting of the Common Council of Philadelphia, on the 16th inst., the Chief Engineer of the Water Department submitted the following: "In order that this department may supply, next summer, the high ground in the wards named in the annual appropriation for 1879, I would respectfully call your attention to and request a more specific appropriation of the said item, as follows:

One ten-million engine, foundations, connections, and inlet	$40,000
Boilers, connections, and foundations	20,000
House, excavations, etc	15,000
Stand-pipe and foundations	15,000
Connections	10,000
	$100,000

That the small engine at the Frankford Works may be transferred. I would further request a more specific appropriation of the loans merged by ordinance of December 31st, 1878, as follows: One ten-million gallon engine, foundations, steam and water connections, $38,500; and for labor laying 48-inch mains from the Spring Garden Works to stand-pipe, $11,500. Total, $50,000."

ASSAY DEPARTMENT OF THE ENGINEERING AND MINING JOURNAL.

This department is opened for the benefit of miners, prospectors, and others interested in minerals.

Replies will be made in these columns, and *without charge*, to questions asked regarding the nature and commercial value of minerals, and of samples sent.

Assays determining the actual composition and value of ores will be made at the following rates. All assays are made with the utmost care by the most experienced and competent assayers:

Assay for Gold	$2.00	Assay for Copper	$2.00
" Silver	1.50	" Lead	1.50
" Gold and silver	2.00	Assay for zinc	$3.00
		Zinc analyses	5.00

The amount should invariably accompany the order, and expressage or postage must always be prepaid.

Communications, samples, etc., to be addressed to
ENGINEERING AND MINING JOURNAL, 27 Park Place, New York.
(P.O. Box 4404.)

ANSWERS.

CCVII. J. T. B., Rochester, N. Y.—Samples of ore contain: Mt. Maid, 8: silver, 198 oz.; gold, none. Bonanza 1: Silver, 306 oz.; gold, none; per ton of 2000 lbs.

STATISTICS OF COAL PRODUCTION.

Comparative statement for the week ending Jan. 11th and years from January 1st:

TONS OF 2240 LBS.	1879.		1878.	
	Week.	Year.	Week.	Year.
Wyoming Region.				
D. & H. Canal Co.	39,885	49,544	59,392	97,453
D. L. & W. RR. Co.	47,211	77,348	44,057	79,201
Penn. Coal Co.	11,144	19,239	19,512	32,885
L. V. RR. Co.	11,309	14,941	20,126	41,133
P. & N. Y. RR. Co.	17	172	616	949
C. RR. of N. J.	*4,550	4,550	22,977	36,827
	114,106	165,794	166,660	288,448
Lehigh Region.				
L. V. RR. Co.	22,820	35,420	48,839	79,780
C. RR. of N. J.	*19,176	19,176	12,812	22,609
S. H. & W. B. RR.				
	41,996	54,596	61,651	102,389
Schuylkill Region.				
P. & R. RR. Co	75,858	114,774	19,313	101,666
Shamokin & Lykens Val.	15,585	15,585	3,795	6,021
	91,443	130,359	23,108	107,687
Sullivan Region.				
Sul. & Erie RR. Co.	963	1,540	904	1,346
Total	248,508	352,289	252,323	499,868
Increase				
Decrease				

* Nine days ending January 11th.

The above table does not include the amount of coal consumed and sold at the mines, which is about five per cent of the whole production.

Belvidere Delaware Railroad Report for week ending Jan. 11th:

	Week.	Year. 1879.	Year. 1878.
Coal for shipment at Coal Port (Trenton)			
Coal for shipment at South Amboy	3,363	4,193	37,615
Coal for distribution	3,600	5,072	7,155
Coal for Company's use	1,445	1,754	2,506

Receipts and shipments of coal at Chicago Ill., for the week ending Jan. 11th, and year from January 1st:

	Week. Tons.	Year. Tons.
Receipts	24,822	38,176
Shipments	6,038	9,814

Perth Amboy Business:

	Tons.
Received for the week	5,834
Shipped for the week	13,133
On hand Jan. 11th	96,025

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania railroads, amounts to 3863 tons, as compared with the corresponding period in 1877.

The Production of Coke for the three days ending Dec. 31st:

Tons of 2000 lbs.	Three days.	Year.
West Penn. R. R.	394	87,994
Southwest Penn. R. R.	2,999	786,090
Penn. & Westmoreland Region, Pa. R. R.	461	78,766
Pittsburg, Penn. R. R	5,868	128,900
Penn. R. R. (Allegheny Region)	361	5,241
Total	10,083	1,087,000

The Production of Bituminous Coal for the week ending Jan. 11th was as follows:
Tons of 2000 lbs., unless otherwise designated.

	Week. Tons.	Year. Tons.
†*Cumberland Region, Md.*		
Tons of 2,240 lb.	17,746	17,746
Barclay Region, Pa.		
Barclay R. R., tons of 2,240 lbs.	6,422	11,962
Broad Top Region, Pa.		
Huntingdon and Broad Top R. R.	2,671	3,245
*East Broad Top	588	63,063
Clearfield Region, Pa.		
*Snow Shoe	256	29,169
*Tyrone and Clearfield	6,977	1,270,262
Allegheny Region, Pa.		
*Pennsylvania R. R	836	200,139
Pittsburg Region, Pa.		
*West Penn R. R.	1,084	186,308
*Southwest Penn. R. R.	296	25,664
*Penn & Westmoreland gas coal, Pa. R. R.	3,917	692,541
*Pennsylvania R. R.	2,950	429,498

*For the three days ending Dec. 31st, 1878.
† Eleven days ending Jan. 11.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Jan. 17, 1879.

Anthracite.

The anthracite trade has been brisk, and prices, though low, have, in general, been firm during the past week. The cold weather has stimulated consumption. Stocks are everywhere low, and coal is coming forward but slowly, owing to the Delaware River being closed by ice, and to heavy snow on the transporting lines. Dealers, therefore, have a good

demand for all the coal they can supply, though there is no excitement in the market. Should the obstruction to traffic continue, and the temperature fall a few degrees, there might be a sudden, though temporary, increase in prices.

The Reading Company has arranged to ship from 1500 to 2000 tons a day to Amboy over the Pennsylsylvania RR., or rather since the Pennsylvania RR. and the Reading are not working harmoniously together, the coal is consigned to S. H. Brown & Co.

There are still rumors of combination, though they have no very tangible foundation apparent. It is said that Judge Packer is becoming very nervous, and is disposed to go into some kind of an arrangement with the other companies, and it is rumored that Mr. Robert H. Sayre, of the Lehigh Valley RR., will present at the meeting of his company, the end of this month, some new plan for "regulating the trade." The only tangible fact in this connection seems to be that none of the companies except the Delaware & Hudson have made contracts for future delivery, and those made by that company or its dealers, with but a few exceptions, do not run beyond the end of March. The exceptions referred to are the contract with the Fulton Ferry Company, said to be about 40,000 tons at $2.75 for season delivery, and a contract made by —— Cook, who deals in D. & H. coal, with the Commissioner of Charities, for some 14,000 tons grate coal, forward delivery, at, it is said, $2.63 alongside; 4000 tons more were sold to the same department at $2.62. Prices may be said to range from $2.30 to $2.50, f. o. b., at Weehawken, and $2.50 to $2.70 alongside in New York for steam coals.

Mr. Gowen, in his annual report to the stockholders of the Reading Company—from which we shall make some extended extracts next week—says:

"The injuries suffered by the company owing to the combination of last year, as compared with its independent position of the previous year, were: An increase in the cost of mining coal; a large decrease in the railway receipts from merchandise and passengers, owing to diminished output of coal; an increase of accidents in mining, due to the condition of the mines being affected by the frequent suspensions of mining; an unsettled feeling of discontent among the miners and laborers in the coal-fields, due to want of employment, which was not at all compensated by the increase of wages; a feeling of opposition among iron and other manufacturers at the frequent interruption of mining, resulting in a disposition to resort to other fuels rather than submit to arbitrary interference with the regularity of their accustomed supply of anthracite; an absolute failure to realize in increased prices for coal, or increased rates of transportation, sufficient to overbalance the increased cost due to restricted production, all involving a loss of net profits to the two companies, as compared with the previous year, of $382,173.96.

"On the other hand, the benefits resulting from the combination have been the actual consumption of all surplus coal, and the ability to secure fair prices in the future, which it was impossible to obtain so long as the large production, kept the market overstocked. It follows, therefore that if the company could obtain its proper quota of the entire tonnage, and if perfect, good, and fair dealing could be secured in any future compact between the several interests, this company would have nothing to lose by continuing as a member of any properly organized association. It must be confessed, however, that the manner in which previous compacts have been kept by one of the parties, rather than the act of association itself, causes the managers to distrust any future agreement that is not amply protected in all the essential parts in which the last two have unfortunately proved defective. In open competition for the market, with the admitted excellence and great variety of Schuylkill coal, and no restrictions imposed upon production, the managers have no fear of the ability of the company to meet all of its cash fixed charges; but they can not contemplate without a shudder the prospect of again tying their hands by agreements such as those made in 1876 and 1878, under which it was in the power of one interest to render abortive any attempt to secure increased profits, and they would be guilty of gross mismanagement if they consented to any further restriction of production that was not accompanied by practical and effectual guarantees that the reduced output should yield at least as great a profit as the increased quantity which could be mined and transported in open competition."

There is every indication of the present year being one of great business activity and prosperity, and if the trade be unrestricted by combination, the demand will no doubt be so great as to destroy the last argument for combination, and will make the business satisfactory in prices and in volume. Business of every kind is to-day better and more hopeful than it has been at any time within the past four years.

The Wilkes-Barre miners have gone to work at the reduction of 10 per cent in wages, and it is understood this arrangement is to continue at least till April.

Bituminous.

There is nothing worthy of note to record in the bituminous trade.

New York.

Wholesale Prices of Bituminous Coal.

MANUFACTURING AND STEAM COALS.

Cumberland at Georgetown and Alexandria	2.75@2.90	4.35@4.50
Cumberland, at Baltimore	2.90@3.00	4.35@4.50
Cl'rfi'd "Eureka" and "Franklin."		
At mines	0.75	....
At Baltimore	3.25	4.50
At Philadelphia	3.25	4.50

DOMESTIC GAS COALS.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside at New York.
Westmoreland and Penn	$4.25	.....
At Greenwich, Philadelphia	.....	$5.50
At S. Amboy	5.00	5 50
Kanawha at Richmond	4.10	5.40
Red Bank Cannel, Pa., at Philadelphia	8.00	8.50
Youghiogheny, Waverly Co., at Balt	4.00	5.65
Despard, West Va	4.50	6.00
Murphy Run, West Va., at Baltimore	3.75	5.85
Fairmount, West Va., " "	3 75	5.70
Newburg Orrel. Md. " "	3.75	6.00
Cannelton Cannel, West Va	....	10.00
" Splint " at Richmond	6.00	7.00
" Gas Coal at Richmond	4.00	5.65
Peytona Cannel, W. Va., at Richmond	....	10.00

FOREIGN GAS COALS.

	Sterling.	Am. cur'ncy
Newcastle, at Newcastle-on Tyne	7s.6d.	$2 50@ $3.50
Liv. House Orrel, at Liv.	25s.	13.00
Ince Hall Cannel "	35s.6d.	18.00
" Gas Cannel "	25s.6d.	10 00@ 10.50
Scotch Gas Cannel, at Glasgow, nominal	25s.	7 50
	Gold.	
Bl'k House, at Cow Bay, N.S.	$1.75	$4.50
Caledonia, at Pt. Caledonia	1.50	4.25
Glace Bay at Glace Bay	1.50	4.00
Lingan, at Lingan Bay	1.50	....
Intern'l Mines, at Sydney	1.75	4.50
Pictou, Vale Mines, at Pictou	2.00	4.70

Wholesale Prices of Anthracite Coal Delivery f. o. b. at Tide Water Shipping Ports, per ton of 2240 lbs.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
WYOMING COAL.	$	$	$	$	$	$
‡Lackawana, at Weehawken						
*Pittston, at Weehawken	2 60	2 70	2 85	3 20	2 60	
L. Val. Coal Co., at Amboy	2 60	2 70	2 85	3 20	2 60	
Wilkes-Barre at Pt. Johnson	2 60	2 70	2 85	3 20	2 60	
Plymouth Red Ash at Port Johnson		2 70	2 85	3 30	2 60	
Swoyers at Eliz. Pt. or S. A.	2 60	2 60	2 75	3 20	2 60	
LEHIGH COAL.						
Spring Mount. Lehigh, at P. Amboy	3 25	3 00	3 00	3 20	2 60	
Cross Creek, at Port John.	3 00	3 00	3 00	3 20	2 60	
Buck Mount. Vein at Elizabeth Port or S. A.	3 50	3 00	3 00	3 20	2 60	
Mount Pleasant at Hoboken	3 75	3 25	3 25	3 25	2 75	
Hazleton at Hoboken	3 75	3 25	3 25	3 25	2 75	

* Forty cents per ton additional for delivery in New York.

† On coal delivered f. o. b. at the Philadelphia and Reading Coal and Iron Co.'s Wharf at Williamsburg, the current rate of harbor freight will be allowed from the prices here given.

Retail Prices.

Per ton of 2000 lbs,

Anthracite.

	G. & Egg.	Stove.	Chest.
Pittston coal delivered	$4.00	$4.25	$4.00
Lack. coal, delivered below 59th St.	4.00	4.25	4.00

Bituminous.

Liv. House Orrel	$18.00	American Orrel	$11.00
Liv. House Cannel	18.00	Red Bank Cannel	7.00
Am. "	11.00	Cumberland	9.00
Ca'n'lt'n Bl'k, or splint.	10.00		

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Jan. 17, 1879.

American Pig.—This department of the iron trade is the most quiet of all. The financial condition of many furnace companies, and the failure of others, have created a demoralization among both consumers and speculators that makes it impossible to move stocks rapidly. Iron is selling at less than cost, and lower than it will likely be made for a long time to come, yet it is no temptation to buyers. The business doing is entirely in a small way, and does not aggregate largely. We quote, No. 1 Foundry at $16@$18; No. 2 Foundry, $15@$17, and Forge, $14@$15.

Scotch Pig.—Without business, we quote Eglinton at $19.50@$20, and Coltness, $22@$22.50.

Rails.—There is a large amount of inquiry, but no business has transpired during the week. It is said that, as the steel mills have a good supply of orders on their books, they are showing more strength in prices, although there has been no actual change made in quotations, which are $40@$41 at mills. Iron rails are quoted at $32@$36 at mills.

Old Rails.—During the past ten days a business of 7000 tons is reported to have taken place at $18.50@$20. The nominal closing price is $20.

Wrought Scrap,—A sale of 200 tons is reported at a price equal to $21 here. We quote at $21@$22.

Our Richmond (Va.) correspondent says: "Active inquiry for old rails and wrought scrap-iron. Pig-iron quiet."

Our Columbus correspondents say:

"The inquiries for pig-iron the past week have been quite frequent. The outlook for a brisk demand in the next two or three weeks is very encouraging, as consumers, as a rule, had very light stocks on hand at time of invoicing, and now that the old year's business is about squared up, they are beginning to look around with a view of purchasing stocks to start up again. Prices on all grades are well maintained, and we think it will not be necessary in the future, as in the past, to make concessions to effect sales. Quotations unchanged."

FREIGHTS.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to Jan. 16th, 1879.

PORTS.	From Philadelphia.	From Baltimore.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Alexandria			
Allyn's Point			
Annapolis			
Barnstable			
Bath, Me		1.75	
Boston, Mass		1.75	1.50
Braintree			
Bridgeport, Conn.		1.30	
Bristol, R. I.			
Brooklyn			
Cambridge, Mass.			
Charleston			
Chelsea			
Charlestown			
Cambridgeport			
Danversport			
East Cambridge			
East Boston			
Fall River		1.30	1.00
Fulton, Texas			6.00
Georgetown			
Gloucester			
Hackensack			
Hartford		1.30	
Hingham			
Hoboken			
Hunter's Point			
Jersey City			
Lynn			
Marblehead			
Middletown			
Newbern			
New Bedford		1.30	1.65
Newburyport		1.90	
New Haven		1.30	70
New London		1.30	
Newport			
New Rochelle			
New York		1.30	
Newark			
Norfolk, Va			
Norwich		1.60	
Norwalk, Conn			
Pawtucket		1.80	
Petersburg			
Philadelphia			
Port Eades			
Port Royal			
Portland		1.75	1.50
Portsmouth, Va.			
Portsmouth, N.H.		1.90	
Providence		1.30	1.00
Richmond, Va			
Saco			
Sag Harbor			
Salem, Mass.			
Savannah			
Somerset			
Trenton			
Troy			
Wareham		1.80	
Washington			
Williamsburg			
W'lmington, Del.			

Per'h Amboy to Boston, $1.

* And discharging and towing. † And discharging. ‡ And towing. § 3 cents per bridge extra.

Ocean Freights.

Ocean Freights on coal, iron, etc., per ton of 2000 lbs. to and from foreign and domestic ports, for four weeks ending Jan. 16th, 1879, are given below.

DATE.	From	To	Cargo.	R'te
Dec. 19	San Francisco	Unit'd Kingd'm	Iron	40s.
" 21	Philadelphia	Matanzas	Iron	4.00
" 24	Trapani	Boston	Salt	9s.
" 24	New York	Port Royal	RR. iron	1.75
" 24	New York	Richmond	*	90
" 24	New York	Boston	Pig-iron	1.50
" 27	Sidney, C. B.	St. Jago	Coal	3.75
" 27	Lingan	Cardenas	Coal	3.50
" 27	Barren Island	Savannah	‡	1.75
" 27	Elizabethport	Savannah	Guano	1.50
" 27	Boothbay	Savannah	‡	1.75
" 31	Baltimore	Rio Janeiro	Coal	7.00
" 31	Georgetown	Havana	Coal	3.50
Jan. 7	Boston	San Francisco	Iron	†
" 7	Santander	New York	Iron ore	§
" 7	Barren Island	Richmond	‡	1.05
" 11	Charleston	New York		2.25
" 11	New York	Cienfuegos	Coal	2.50
" 14	Barren Island	Charleston	‡	1.75
" 14	New York	San. de Cuba	Coal	1.50
" 14	Barren Island	Wil'ngt'n, N. C.	‡	2.00

* Steel rails. † $10@$12. ‡ Phosphate. § 10s. 6d. Rock phosphate.

METALS

NEW YORK, Friday Evening, Jan. 17, 1879.

The week under review has been a very satisfactory one, especially so when we consider the period of the year. Dealers, brokers, and all are very hopeful for a much better business during 1879 than for years. A very active consumption is, at least, very probable, and prices may at times rule higher, but a large business and small profits must be looked to for success in the early future.

RECEIPTS OF METALS AT NEW YORK FOR THE TWO WEEKS ENDING JANUARY 16TH AND YEAR FROM JANUARY 1ST, 1879.

	.....	.....	Jan. 9	Jan. 16	Year from Jan. 1.
Copper, bbls.	.....	.....	96	72	168
Copper, boxes	.....	.....	.....	.....	.....
Copper, cakes	.....	.....	109	.....	109
Lead, pigs	.....	.....	3,854	4,921	8,775
Spelter, pieces	.....	.....	1,725	2,780	4,505
Quicksilver, flasks	.....	.....	.....	.....	.....

Copper.—It is said that a very large business has been done with manufacturers at 15½c. We were unable to learn full particulars. The estimates of the quantity of copper sold range from 4,000,000 to 8,000,000 lbs., for delivery into May. The nominal price at the close is 16c., but, if history is to repeat itself, we shall probably see lower prices, as these large transactions always leave somebody out in the cold, and in their efforts to find a market they invariably break prices.

Tin.—We note sales of 500 pigs of Straits, at 14¼@14½c. The London quotation to-day is £59 10s., and Singapore, $18.25. The closing prices of tin vary according to the views of those offering it. We quote at 14⅛@14½c. for Straits; 14@14¼c. L. & F.; 14⅛@14¼c., Refined. Ten tons of L. & F. sold at 14c.

Tin Plates.—The market for tin plates has been very encouraging, and is much firmer. We note sales of 2000 boxes charcoal ternes, at $5.20@$5.25, for Allaway grade; 2000 boxes of coke tins, B. V. grade, at $5.12½@$5.18¼, and 2000 boxes Allaway grade charcoal tins, at $5.85@$5.90. We quote as follows: Charcoal, bright, ⅛ X, Melyn grade, $6.12½@$6.25, and Allaway grade, $6@$6.12½; charcoal ternes, Allaway grade, $5.25@$5.30; coke, bright, B. V. grade, $5.15@$5.20, and roofing, 14×20, $4.80@$4.87½.

Lead.—The past week has been a very active one in lead. The sales aggregate 400 to 500 tons of ordinary, at 4·15@4⅛c., and 100 tons at 4·45c. Of corroding lead the sales have amounted to from 600 to 800 tons at 4·35@4·45c. The nominal price at the close was 4·45@4½c. The Eureka Company is holding at 5c., while there is no stock at St. Louis or Chicago, and, outside of the Eureka Company, but about 1000 tons held by a few parties here. The position is a strong one, and prices will probably continue to advance. A rumor is current that the amount of ore in sight in the Eureka mine is small, and that unless a new ore-body is discovered soon, the immense production of this company must fall off. This may all be true, but the regularity with which deposits have been found in this mine does not make the decreased production a certainty by any means.

Spelter and Zinc.—Without business, we quote spelter at 4½@4⅝c. Sheet zinc has advanced 20c. per cwt. at the works, but is unchanged, at 6¼@6½c. here.

Antimony.—82 casks arrived yesterday and to-day. Cookson's is quoted at 12@12⅛c. and Hallett's at 11¾@11⅞c.

Quicksilver.—The San Francisco *Commercial Herald* of January 9th says: "There is no life to the market, though holders of high-cost mercury have been recently shipping off their stock accumulations. The City of Peking, for Hong King, carried 1400 flasks. The Granada, for Mexican ports, carried 650 flasks. The present nominal price is 40c., but some purchases are made at 39@39½c. for prompt cash."

The receipts at San Francisco in 1878 were 62,192 flasks, as compared with 69,886 in 1877. The exports in 1878 were 34,289 flasks, valued at $1,150,690, while in 1877 there were 46,280 flasks, valued at $1,635,310.

THE BULLION MARKET.

NEW YORK, Friday Evening, Jan. 17, 1879.

The London market continued very dull and weak until Wednesday brought an unexpected and active demand for the India Council bills offered on that day. These were taken at an advance equal to nearly three cents an ounce for silver. It is true that silver has not advanced all of this, but it is 1d., or 2 cents, an ounce higher than it was a week ago, and should Germany not check the advance by heavy sales of silver, the market may be expected to hold firm and advance with a continued demand for East India and China exchange. The London market closes at 50½d.; New York at $1.09¾; and San Francisco 15 per cent discount.

DAILY RANGE OF SILVER IN LONDON AND NEW YORK, PER OZ.

DATE.	London	N. Y.	DATE.	London	N. Y.
	Pence.	Cents.		Pence.	Cents.
Jan. 11....	49½	108	Jan. 15.	50	109¼
Jan. 13....	49⅝	108¼	Jan. 16.	50½	*
Jan. 14....	49¾	108⅝	Jan. 17.	50½	*

* 109¾@110.

Coinage at the San Francisco Mint.—The coinage of the United States Mint at San Francisco for December and the calendar year of 1878 was as follows:

	December.	Year 1878.
Double-eagles	$2,280,000	$34,780,000
Eagles	117,500	261,500
Half-eagles	215,000	723,500
Quarter-eagles	.....	445,500
Standard dollars	1,000,000	9,774,000
Trade dollars	.....	4 162,000
Half-dollars	.....	6,000
Quarter-dollars	.....	35,000
Total	$2,612,500	$50,186,500

Bullion for the New Orleans Mint.—WASHINGTON, January 12.—At the opening of bids for the purchase of silver bullion next Wednesday, proposals will be received for the first time for furnishing silver to be delivered at the mint in New Orleans. This will not, however, increase the quantity purchased by the government, which amounts to about 400,000 ounces weekly. The superintendent of the New Orleans mint has already been authorized to purchase silver in small lots, not to exceed 10,000 ounces in one purchase.

Specie Exports from New York.—The export of specie from the port of New York during the past week amounted to $542,951, of which $456,360 were silver bullion, $540 gold bullion, $6000 American silver coin, $18,051 American gold coin, $2000 English silver coin, and $60,000 Mexican silver dollars. Of the total amount shipped, $519,900 went to London and Liverpool, $9880 to South America, $10,000 to Havana, and $3500 to Hamburg.

The Eureka Consolidated Mine, of Nevada, reduced 75,147 tons of ore during the past year that yielded 16,823 tons of bullion.

Recent shipments and arrivals of ores to and from San Francisco, were as follows: The ship County, of Inverness, for Liverpool, carried of copper ore, 40,311 lbs.; the Granada, from Central America and way ports, brought 160 cassons silver ore and treasure amounting to $219,750.

The Pioche, Nevada Mines, shipped, during 1878, bullion to the amount of $609,841.75.

The Little Pittsburg Mine, at Leadville, Col., is turning out about $4000 worth per day.

The shipments of the Tuscarora District for 1878 was by months as follows:

January	$206,752.96	September	$41,173.65
February	151,787.85	October	88,564.88
March	68,494.43	November	76,661.67
April	92,628.40	December	160,649.43
May	132,410.19		
June	79,482.69	Total shipment	
July	73,530.67	for the year	$1,212,336.67
August	40,199.85		

The Shipments of the Elko County (Nev.) Mines for 1878 are given in the following:

	Tons.	Value.
For the quarter ending March 31, 1878	3,076	$443,444
" " " June 30	4,296	317,314
" " " September 30	3,145	200,004
" " " December 31	3,500	350,000
Total	14,017	$1,310,762

Equal to about $93 per ton.

The Tybo Consolidated Mining Company produced, during 1878, $746,552. This represents a run of ten months, as the furnaces were closed down half of the month of April, and from the 1st of November to the 16th of December for repairs. The product of December was $31,765.35, which represents about ten days' run.

The Silver Reef (Utah) Shipments for 1878.—The *Silver Reef Miner* of the 8th inst. has the following: "The shipments from Leeds, Harrisburg District, for 1878 were $1,141,911.19. The product of the Leeds Company for 1878 was $236,917.42; the Christy, $299,993.60. The Stormont Company shipped from Silver Reef last month upward of $50,000, which is pretty good for a company scarcely two months old."

FINANCIAL.

New York Stocks.

NEW YORK, Friday Evening, Jan. 17, 1879.

The feature of the week in the market for coal stocks is the immense business done in the shares of the Delaware, Lackawanna & Western RR. stock, the aggregate transactions amounting to over 300,000 shares. The range in the quotations of this stock during the week have been considerably in advance of those recorded in our last, and the closing quotation to-day show an improvement of 3 per cent. Delaware & Hudson shows an advance of about 4 per cent, with a decided increase in the sales. In New Jersey Central stock the quotations have appreciated over 3 per cent, and the sales an increase of some 25,000 shares as compared with our last.

Miscellaneous Stocks and Quotations.

Sales and quotations of the stocks and bonds dealt in here, at Philadelphia and Baltimore, for the week ending the 17th inst. are given in the following tables. The Philadelphia quotations will have a * affixed. The Baltimore quotations are indicated thus †.

STOCKS.	Par Value.	High'st	Lowest	Closing	Sales: Shares.
American Coal Co.	$25	.....	.....	30	.....
St. L., I. M. & S. R. Co.	100	16¾	15¾	13	2,370
Spring Mt. Coal Co.	50	.....	.....	50	.....
*Cambria Iron Co.	50	.....	.....	60	.....
*Penn. Salt Mf'g Co.	50	.....	.....	68	.....
*Westm'land C. Co.	50	.....	.....	45½	.....
*Buck Mt. Coal Co.	50	.....	.....	38	.....
*Schuyl. Nav. Co.	50	.....	.....	.....	.....
†B. & O. RR. Co. 1st pf	.....	.....	.....	95	.....
†B. & O. RR. Co. 2d pf	100	.....	.....	92	.....
" " " " com	90	88⅝	88⅜	88½	40
†George's C'k C. Co	100	.....	.....	50	.....
†S. Clara M'g Co.	100	.....	.....	25	.....
†Atlantic Coal Co.	10	.....	.....	75	.....

BONDS.	Princ'l. When Due.	Int'est. When Due.	Hig'st.	Lowest	Amount.
D., L. & W., 7s, conv	1892	J. & D.	105	104	11,000
" " " 2d mtge.	1881	M. & S.	116	.....	6,000
N. J. C., 1st mtge. new	1890	F. & A.	117½	116¾	18,000
" " " 1st mtge., con	1899	Q.	94	.....	*327,000
" " " convt.	1902	M. & N.	77½	74¾	†81,000
Lehigh & W. B., con	1899	Q.	42½	41⅜	†61,000
Am. Dock & Imp. 7s	.....	J. & J.	.....	.....	.....
St. L. I. M. & S. 1st mt	1892	F. & A.	111	110⅞	3,000
Ches. & O., 1st mtge	1899	M. & N.	.....	.....	.....
D & H C Co., 1st m. rg	1884	J. & J.	95¼	94	21,000
" " " " " "	1891	J. & J.	95⅞	93¾	95,000
" " " " m. loan cp	1894	A. & O.	.....	.....	.....
" " " " " rg.	1894	A. & O.	.....	.....	.....
" " " " new mge.	.....	.....	.....	.....	.....
*L. V. R., 1st m. 6s, cp.	1898	J. & D.	112	.....	1,000
" " " rg.	1898	J. & D.	112	.....	6,000
" " " 2d m. 7s, rg.	1910	M. & S.	116¼	.....	10,000
" " " con. m. 6s, rg	1823	J. & D.	100	99	43,000
" " " 6s cp.	1923	J. & D.	100	99	3,000
*Pa. RR., 1st m. 6s, cp	1880	J. & J.	102⅞	102⅝	17,000
" " g. m., 6s, cp.	1910	J. & J.	.....	.....	.....
" " " 6s, rg.	1910	A. & O.	.....	110	.....
" " con. m. 6s, rg.	1905	Q.	.....	.....	.....
" " " 6s, cp.	1905	J. & D.	101	100½	50,000
" " new loan, 6s	.....	.....	109¼	.....	1,700
*P. & R. R., 1st m. 6s, R. C. 43-44	1880	J. & J.	.....	.....	.....
P. & R. R., 1st m. 6s, R. C. 48-49	1880	J. & J	.....	.....	.....
P. & R. R., 2d m. 7s cp	1893	A. & O.	..	..	.....
" " " scrip	1882	J. & J.	.....	49	.....
" " " in. m. 7s, cp	1896	J. & D.	.....	.....	.....
" " " c. m. 7s, cp.	1911	J. & D.	101¼	100½	15,000
" " " 7s. rg.	1911	J. & D.	100½	100⅜	3,000
" " " cvt. 7s, R. C	1893	J. & J.	.....	46	.....
" " C. & I. Co., Deb 7s, R. C.	1892	M. & S.	.....	.....	.....
& R. C. & I. Co., m. 7s, R. C.	'92-3	various	.....	.....	.....
*L. Nav. Co., 6s, rg. m.	1884	J. & Q.	103	.....	3,758
" " RR., rg. m.	1897	F. & Q.	106	105½	4,000
" " cvt. co. G. R.	1894	M. & S.	96	.....	1,000
" " " Gold R. C.	1897	J. & D.	92	91½	5,500
" " con. m. 7s, rg.	1911	J. & D.	65	.....	6,000
*P. & N. Y. C., 7s, R. C.	1896 / 1906	J. & D.	.....	114	.....
*Pa Canal, 6s. cp.	1910	J. & J.	.....	63	.....
*Schuyl. Nav., 1st m. 6s. rg	1897	M. & Q.	.....	80	.....
*Sus. Coal, 6s, rg.	1911	J. & J.	86	83½	18,000
†Balt. & O. RR., 6s.	1880	J. & J.	100⅛	.....	500
" " " " 6s.	1885	A. & O.	106	105¾	1,500

Total transactions for the week..... $812,958

*$326,000 assented, selling from 75¼ to 77⅞. †Assented

Philadelphia Stocks.

PHILADELPHIA, Friday Evening, Jan. 17, 1879.

Prices of coal stocks on the Philadelphia market

COAL STOCKS.

NAME OF COMPANY.	Capital Stock.	SHARES. No.	SHARES. Par Val.	Last Dividend. Mo.	Y.	A't.	Rate per Ann.	Jan. 11. H.	Jan. 11. L.	Jan. 13. H.	Jan. 13. L.	Jan. 14. H.	Jan. 14. L.	Jan. 15. H.	Jan. 15. L.	Jan. 16. H.	Jan. 16. L.	Jan. 17. H.	Jan. 17. L.	SALES.
	$		$				Per c'nt	Quotations of New York stocks are based on the equivalent of $100. Philadelphia prices are quoted, so much per share.												
Consol. Coal	10,250,000	102,500	100	Jan.	77	2½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Del. & H. C.	20,000,000	200,000	100	Aug	76	4	9	40⅛	39¼	41	40¼	41	40	41⅜	40¾	41½	40⅜	42⅜	42	17,635
D., L. & W. R.	26 200 000	524,000	50	July	76	2½	5	45⅛	44⅞	47½	45¾	48	46¼	49	47½	48	46⅝	48⅛	47¾	300,225
Lehigh C. & N.	10,428,550	208,971	50	Nov	76	1½	5¼	.....	.....	14⅞	14⅞	14⅞	14¾	15⅛	15	15	14⅞	15½	15	1,345
Leh. V'y R. R.	27,228,855	540,858	50	Dec	78	1	4	33¾	33⅜	33¾	33¾	34	33⅞	34¾	34¼	35	34½	35¼	35	1,590
Maryl'd Coal	4,400,000	44,000	100	Jan.	76	1½	1½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. J. C. R. R.	20,600,000	206,000	100	Apr	76	2½	2½	35	34⅜	36⅛	35	36¼	35¼	36½	35¾	37	35	38⅝	37¼	42,385
Penn. Coal	5,000,000	100,000	50	May	78	3	3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. R. R.	68,370,200	1,337,404	50	Nov	78	2	8	33	32⅝	33	32¾	33⅜	33	34⅛	33⅜	34⅛	33¾	34½	34¼	82,815
Ph. & R. R. R.	34,278,175	685,563	50	Jan	76	4	2½	10	11⅞	11¾	11¾	11½	12	11¾	12¼	11⅞	12	11¾	12⅛	12	9,9 7₁

The Delaware and Hudson Canal Co. has paid in dividends to date $38,821,104, and the Philadelphia and Reading $43,012,467

Total Sales..... 455,966.

GENERAL MINING STOCKS.

Dividend Paying Mines.

NAME AND LOCATION OF COMPANY.		Feet on Vein.	Capital Stock.	SHARES. No.	Par Val	ASSESSMENTS. Total levied to date.	Date and amount per share of last.	DIVIDENDS. Total paid to date.	Last Dividend.	Rate p. An	HIGHEST AND LOWEST PRICES PER SHARE IN CURRENCY AT WHICH SALES WERE MADE. Jan. 11. H.	L.	Jan. 13. H.	L.	Jan. 14. H.	L.	Jan. 15. H.	L.	Jan. 16. H.	L.	Jan. 17. H.	L.	SALES.
Alps	Nev.	800		30,000		24,000	Aug. 1878 $1 00	37,500	Apr. 1876 $0 05		..	....	....	....	....	....	....	....	....	....	....	....	....
Belcher, G. S.	Nev.	1,040	10,400,000	104,000	100	1,392,200	Oct.. 1878 1 00	15,397,200	Apr. 1876 1 00	....	4	....	....	....	....	....	....	....	....	....	....	....	20
Bobtail, G.	Col.	2,500	1,136,630	227,326	5	*	....	56,831	Nov. 1877 25	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Bobtail Tunnel, G.	Col.	.....	100,000	20,000	5	52,000	July 1873 0 30	48,000	June 1878 50	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Bodie, G.	Cal.	.....	5,000,000	50,000	100	25,000	Feb. 1878 0 50	750,000	Dec. 1878 1 00	....	....	....	10	....	9¼	9	....	....	9½	9⅜	9	....	155
California, G. S.	Nev.	600	54,000,000	540,000	100	.....	....	29,700,000	Dec. 1878 1 00	....	10¾	....	11	10¾	11⅛	....	11½	10⅛	....	....	10¼	10	365
Calumet & Hecla, C.	Mch	.....	2,000,000	80,000	25	1,200,000	....	13,450,000	Aug. 1878 5 00	....	....	....	174	173½	....	....	175	174½	....	....	....	....	71
Central, C.	Mch	.....	500,000	20,000	25	100,000	June 1862 0 65	1,260,000	Feb. 1877 5 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Chollar Potosi, G. S.	Nev.	1,400	2,800,000	28,000	100	1,750,000	Sept. 1873 5 00	3,050,000	Feb. 1872 1 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Copper Falls, C.	Mch	.....	1,000,000	20,000	50	525,000	May. 1876	100,000	Nov. 1871 1 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cons. Virginia, G. S.	Nev.	710	54,000,000	540,000	100	474,600	June 1873 3 00	40,500,000	June 1878 1 00	....	8	....	10	8	8¼	8	8½	8⅜	....	....	9½	8¾	621
Confidence, G. S.	Nev.	130	2,496,000	24,960	100	256,320	Apr. 1878 0 50	78,000	May. 1865 8½	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cons. Her. & Roe	Col.	16,500	1,000,000	100,000	10	*	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Crown Point, G. S.	Nev.	600	10,000,000	100,000	100	1,973,370	Dec.. 1878 1 00	11,588,000	Jan.. 1875 2 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Daney	Nev.	2,000	.....	108,000	....	91,800	Nov. 1878 0 20	56,000	July 1863	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Eureka Cons., G. S. L.	Nev.	.....	5,000,000	50,000	100	100,000	May. 1876 1 00	3,250,000	Nov. 1878 3 00	....	....	....	....	....	....	....	....	....	....	....	30½	....	10
Eureka G. Mg., G.	Cal.	1,680	2,000,000	20,000	100	.....	....	2,149,000	Apr. 1878 0 25	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Findley, G.	Geo.	.....	200,000	200,000	1	.....	....	20,000	Dec. 1878 10	....	58c	....	....	....	....	....	....	....	....	....	....	....	100
Franklin, C.	Mch	.....	500,000	20,000	25	360,000	June 1876 5 00	585,000	Nov. 1871 1 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Gila	Ariz	.....	.....	100,000	....	5,000	Aug. 1878 0 25	50,000	Aug. 1875 0 25	....	..	....	....	....	....	....	....	....	....	....	....	....	....
Gould &Curry, G. S.	Nev.	612	10,800,000	108,000	100	2,828,000	Nov. 1878 1 50	3,826,800	Oct. 1870 10 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Grand Prize	Nev.	1,500	.....	100,000	....	100,000	July. 1878 1 00	400,000	Feb. 1878 1 00	....	....	6	....	....	....	....	....	....	....	....	....	....	5
Hale & Norcross, G. S.	Nev.	400	11,200,000	112,000	100	2,970,000	Dec. 1878 0 50	1,598,000	Apr. 1871 5 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Hukill, G. S.	Col.	3,288	1,000,000	100,000	10	*	....	.....	Dec. 1878 0 10	....	....	....	3¼	....	3.30	3.20	3.15	....	3.15	....	3.15	3	1,545
Independence	Nev.	1,500	.....	100,000	....	75,000	Feb.. 1878 15	150,000	Nov. 1878 25	....	....	....	1.10	1.05	1.15	1.10	1.10	....	1.35	1.10	....	....	1,060
Kentuck, G. S.	Nev.	95	3,000,000	30,000	100	300,000	Aug. 1878 1 00	1,252,000	Mar. 1870 5 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
K. K. Cons.	Nev.	.....	.....	50,000	....	250,000	Nov. 1878 1 00	50,000	Sept. 1873 0 25	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Leeds	Uth.	3,000	.....	60,000	....	.....	....	78,000	Oct.. 1878 0 15	....	....	....	1	....	....	....	....	....	....	....	1.10	....	155
Leopard, L. G. S.	Nev.	1,500	5,000,000	50,000	100	175,000	Oct.. 1878 50	162,500	Dec. 1876 0 50	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Manhattan	Nev.	.....	.....	50,000	....	50,000	Oct.. 1878 1 00	400,000	Feb. 1877 1 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Merrimac, S.	Mas.	1,500	500,000	100,000	5	*	June	120,000	Mar.	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Minesota, C.	Mch.	.....	1,000,000	20,000	50	430,000	..... 1869 1 00	1,820,000	Mar. 1876 0 50	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Modoc	Cal.	4,000	.....	100,000	....	4 0,000	Nov. 1878 0 50	50,000	Dec. 1876 0 50	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Moose	Col.	39,000	2,000,000	200,000	10	*	....	550,000	Mar. 1878 0 25	....	4.30	....	....	....	....	....	....	....	....	....	....	....	100
National, C.	Mch.	.....	500,000	20,000	25	195,000	Oct.. 1875 1 00	360,000	Oct. 1873 1 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
N. Y. & Colorado, G.	Col.	.....	1,000,000	50,000	20	*	....	20,000	Mar. 1877 0 20	....	1.45	....	....	....	1.55	1½	1¼	....	....	....	....	....	200
Northern Belle, S.	Nev.	1,000	5,000,000	50,000	100	.....	....	1,425,000	Feb. 1878 1 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Ontario	Ut.	3,000	10,000,000	100,000	100	.....	....	1,950,000	Jan. 1879 50	....	39	....	....	....	....	....	....	....	....	....	....	....	70
Ophir, G. S.	Nev.	675	10,080,000	100,800	100	3,436,800	Nov. 1878 1 00	1,394,400	Mar. 1864 4 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pewabic, C.	Mch.	.....	500,000	20,000	25	185,000	June 1868 3 00	460,000	July 1873 1 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Phœnix, C.	Mch.	.....	1,000,000	20,000	50	817,500	Sept. 1870 3 00	10,000	Dec. 1876 1 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Plumas	Cal.	.....	1,000,000	100,000	10	.....	....	110,000	Jan. 1879 10	....	3.55	3½	3.55	3.45	3.55	....	3.55	3.50	....	....	3.55	....	1,475
Quincy, C.	Mch.	.....	200,000	20,000	10	.....	....	2,230,000	Feb. 1878 5 00	....	....	....	....	....	....	....	13	....	....	....	....	....	50
Raymond & Ely, G. S.	Nev.	5,000	3,000,000	30,000	100	630,000	Oct.. 1878 1 00	3,075,000	Sept. 1873 3 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Ridge, C.	Mch.	.....	500,000	20,000	25	200,000	....	90,000	Feb. 1875 1 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Rye Patch	Nev.	1,000	.....	30,000	....	157,500	Dec.. 1878 1 00	105,000	Dec. 1877 0 25	....	....	....	....	....	....	....	....	....	....	....	....	....	....
St. Joseph, L.	Mo.	2,000 acs.	1,000,000	100,000	10	.....	....	250,000	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Savage, G. S.	Nev.	800	11,200,000	112,000	100	1,084,500	Dec.. 1878 1 00	4,460,000	June 1869 3 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Seaton, G. S.	Col.	1,700	500,000	50,000	10	*	....	.....	May 1877 0 10	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sierra Nevada, G. S.	Nev.	3,650	10,000,000	100,000	100	2,350,000	Oct.. 1878 3 00	102,000	Jan. 1871 1 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver Islet	Mch	.....	.....	.....	....	.....	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	11
Silver King	Ariz	.....	.....	.....	....	.....	....	450,000	Nov. 1878 0 50	....	....	....	....	....	40	....	40	....	....	....	....	....	....
Standard	Cal.	.....	.....	50,000	....	50,000	July 1878 1 00	700,000	Nov. 1878 1 00	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Yellow Jacket, G. S.	Nev.	1,200	12,000,000	120,000	100	3,798,000	Sept. 1878 1 00	2,184,000	Aug. 1871 2 50	....	....	....	....	....	....	....	....	....	....	....	....	....	....
McClinton	Cal.	1,000	.....	60,000	....	.....	Dec.. 1878 0 25	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Non-Dividend Mines.

Allouez, C.	Mch.	.....	1,000,000	20,000	50	940,000	May 1876 5 00	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Alpha, G. S.	Nev.	306	3,000,000	30,000	100	240,000	Mar. 1878 1 00	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Alta	Nev.	600	.....	100,000	....	985,000	Dec. 1878 1 00	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Am. Flag, G.	Col.	5,300	600,000	60,000	10	*	....	.....	....	....	19c	....	....	....	20c.	....	20c.	....	....	....	....	....	....	....	....	....	....	1,500
Andes	Nev.	2,000	.....	100,000	....	355,000	Oct. 1878 0 25	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Baltimore Cons.	Nev.	1,050	.....	84,000	....	1,015,000	Apr. 1878 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Benton	Nev.	600	.....	108,000	....	91,800	Dec. 1878 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Bechtel	Cal.	.....	.....	60,000	....	75,000	Nov. 1878 0 25	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Bertha & Edith. G.	Vir.	645 acs.	500,000	500,000	10	*	....	.....	....	....	12c	10c	11c	....	13c	11c	13c	11c	12c	11c	11c	....	74,500
Best & Belcher, G. S.	Nev.	545	10,080,000	100,800	100	438,590	Apr. 1878 1 00	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Boyle	Nev.	600	.....	108,000	....	16,240	Aug. 1878 0 15	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Buckeye	Col.	.....	2,000,000	400,000	5	*	....	.....	....	....	....	....	....	....	52c.	20c	25c.	....	....	....	20c	....	1,700
Bullion, G. S.	Nev.	943⅛	10,000,000	100,000	100	3,052,000	Dec. 1878 1 00	.....	....	....	....	....	....	....	8	....	....	....	....	....	....	....	5
Caledonia, G. S.	Nev.	2,188	10,000,000	100,000	100	1,510,000	Nov. 1878 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cashier	Col.	.....	500,000	250,000	2	*	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Challenge	Nev.	90	.....	50,000	....	10,000	Nov. 1878 0 20	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cleveland, G	Col.	3,715	250,000	25,000	10	*	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cons. Imperial, G. S.	Nev.	408	50,000,000	500,000	100	775,000	Sept. 1878 0 20	.....	....	....	¾	....	....	....	....	....	1.05	....	....	....	....	....	301
Con. N. Slope & E. T.C.	Col.	15,000	500,000	10,000	50	.....	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Dahlonega	Ga.	.....	250,000	250,000	1	.....	....	.....	....	....	14c	....	....	....	14c	....	14c	....	13c	....	....	....	8,700
Dana, C.	Mch.	.....	500,000	20,000	25	68,000	Jan.. 1863 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Dawson, S.	Ont.	.....	1,200,000	60,000	20	.....	..... 1878	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Day	Nev.	1,500	.....	100,000	....	55,000	Sept. 1878 0 25	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Dayton	Nev.	1,600	.....	100,000	....	750,000	Apr. 1878 0 25	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
De Frees	Ariz	1,500	.....	100,000	....	115,000	Oct.. 1878 15	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Duncan, S.	Ont.	.....	1,200,000	60,000	20	75,000	July 1876 41⅛	.....	....	....	....	....	3½	....	3¾	....	....	....	....	....	....	....	109
Exchequer, G. S.	Nev.	400	10,000,000	100,000	100	380,000	Jan.. 1878 1 00	.....	....	....	19c	17c	18c	17c	18c	16c	18c	15c	19c	18c	20c	17c	23,820
Gold Placer, G.	Col.	.....	5,000,000	200,000	25	.....	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Granville, G.	N. C.	357 acs.	1,000,000	100,000	10	*	..... 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Humboldt, C.	Mch.	.....	500,000	20,000	25	100,000	Sept 1878 0 15	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Hussey	Nev.	4,500	.....	100,000	....	95,000	Oct.. 1878 0 25	.....	....	....	....	....	¼	....	....	....	....	....	35c.	....	32c	....	500
International, S.	Ont.	.....	1,200,000	60,000	20	.....	....	.....	....	....	50c	....	....	....	....	....	....	....	....	....	....	....	50
Julia, G. S.	Nev.	3,000	11,000,000	110,000	100	745,000	Nov. 1878 1 00	.....	....	....	....	....	4	3½	....	....	....	....	....	....	....	....	25
Justice, G. S.	Nev.	2,100	10,500,000	105,000	100	2,658,500	Aug. 1878 1 05	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
King's Mountain, G.	N. C.	.....	1,200,000	120,000	10	*	....	.....	....	....	1½	....	....	....	....	....	....	....	....	....	....	....	400
Kossuth	Nev.	2,700	.....	108,000	....	421,200	Aug. 1877 0 15	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lacrosse	Col.	3,000	1,000,000	100,000	10	*	....	.....	....	....	29c	28c	29c	28c	28c	27c	28c	27c	27c	25c	27c	26c	16,800
Leviathan	Nev.	2,000	.....	100,000	....	240,000	May. 1878 05	.....	....	....	....	....	....	....	....	....	....	....	45c.	....	....	....	100
Luzerne	Col.	4,200	5,000,000	500,000	10	*	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Madison, C.	Mch.	.....	500,000	20,000	25	123,000	Sept 1876 0 10	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mariposa preferred	Cal.	44,387	5,000,000	50,000	100	1,425,000	June 1877 1 00	.....	....	....	....	....	....	....	....	....	2½	2	....	....	....	....	200
" common	Cal.	acres.	10,000,000	100,000	100	1,425,000	June 1878 1 00	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
McCracken	Ariz	4,500	.....	100,000	....	100,000	Oct.. 1878 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Martin White	Nev.	.....	.....	100,000	....	650,000	Dec.. 1878 1 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mesnard, C.	Mch.	.....	500,000	20,000	25	160,000	Apr. 1876 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mexican, G. S.	Nev.	600	10,080,000	100,800	100	217,400	May. 1878 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Minnietta Belle	Cal.	1,500	.....	100,000	....	75,000	Apr. 1878 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Mt. Bross Tunnel	Col.	8,600	2,000,000	200,000	10	*	..... 1878	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Navajo	Nev.	1,500	.....	100,000	....	125,000	May. 1878 0 25	.....	....	....	....	....	....	....	....	....	45c	....	45c	....	....	....	....	250
New York	Nev.	1,000	.....	100,000	....	700,000	Nov. 1878 0 30	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Occidental	Nev.	1,706	.....	40,000	....	72,500	Feb. 1877 0 25	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Orig. Keystone	Nev.	1,500	1,000,000	100,000	10	50,000	Oct. 1878 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Overman, G. S.	Nev.	1,200	3,840,000	38,400	100	3,404,280	Sept. 1878 3 00	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Osceola, C.	Mch.	.....	1,000,000	40,000	25	2,567,880	Nov. 1877 3 00	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Petherick, C.	Mch.	.....	500,000	20,000	100	165,533	Mar. 1876 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Pleasant View, G.	Col.	1,200	200,000	20,000	10	*	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Quicksilver preferred.	Cal	8,500	4,291,300	42,913	100	*	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	32¼	....	100
" common	Cal.	acres.	5,708,700	57,087	100	.....	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Rockland, C.	Mch	.....	500,000	20,000	25	495,000	Jan.. 1874 1 00	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sag. Belcher, G. S.	Nev.	160	640,000	6,400	100	244,800	Apr. 1876 5 00	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver Hill, G. S.	Nev.	5,400	10,800,000	108,000	100	1,296,000	Sept. 1878 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver Prize	Nev.	1,500	.....	100,000	....	40,000	Nov. 1878 0 15	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Star, C.	Mch.	.....	500,000	20,000	25	265,000	Mar. 1876 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Superior, C	Mch.	.....	500,000	20,000	25	340,000	Mar. 1878 0 25	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sutro Tunnel	Nev.	.....	20,000,000	2,000,000	10	.....	....	.....	....	....	2½	....	....	....	....	....	3	....	....	....	2⅞	....	5'0
Tiptop	Ariz	.....	.....	100,000	....	120,000	July 1878	.....	....	....	....	....	....	....	1	....	....	....	....	....	....	....	100
Tioga	Cal.	1,5	.....	100,000	....	.....	Dec. 1878 0 20	.....	....	....	....	....	....	....	....	....	45c.	....	46c	45c	....	....	1,120
Trio																							
Trojan	Nev.	1,5	.....	100,000	....	240,000	Oct. 1878 0 25	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tuscarora	Nev.			100,000	....	20,000	Nov. 1878 0 05	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Union Cons. G. S.	Nev.	.....	10,000,000	100,000	100	310,000	Apr.. 1874 0 25	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Utah	Nev.	1,000	.....	20,000	....	700,000	Dec. 1878 1 00	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Ward	Nev	1,200	.....	110,000	....	66,000	Sept 1878 0 30	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Wells Fargo	Nev.	1,500	.....	108,000	....	216,000	Sept. 1878 0 50	.....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

G. Gold. S. Silver. L. Lead. C. Copper. * Non-Assessable. +4 15 16.

Total Assessment levied to date ....$58,590,313 Total Dividends paid to date..... ... $151,397,231 Total Sales for the week.....136,684.

have materially improved, and we note a considerable increase in the transactions. Lehigh Coal & Navigation stock closes at 15, against 14⅜ in our last, with about the same number of shares sold. Lehigh Valley stock has advanced about 3 per cent, under limited dealings. Pennsylvania Railroad stock shows an improvement of nearly 4 per cent, with the sales amounting to 82,815 shares. Reading is unchanged. 10,000 shares comprise the transactions in this latter stock.

Gas Stocks.

NEW YORK, Friday Evening, January 17, 1879.

The Cost of Lighting Boston, Mass.—The cost of gas in Boston the past twelve years, and the entire cost of the Lamp Department for the same time, is given in the late report of the Superintendent of Lamps, and may be stated as follows :

Year.	Paid for gas.	Paid for all.
1867	$140,563.25	$219,517.55
1868	179,744.20	272,982.88
1869	172,464.47	276,064.71
1870	204,298.54	324,580.47
1871	212,477.61	337,129 07
1872	219,582.47	359,085.99
1873	229,352.14	363,700.09
1874	284,470.65	440,645.78
1875	314,399.37	466,861.17
1876	335,632.78	498,013.79
1877	340,857.99	466,560.08
1878	336,448.04	459,082.73

The number of lamps in the city is 12,069. The cost of gas per 1000 feet is now : City proper, $1.90 ; South Boston, $2.25 ; East Boston, $2.25 ; Roxbury, $2.25 ; Dorchester, $2.75 ; Brookline, $2.75 ; Brighton, $2.75 ; West Roxbury, $2.75 ; Charlestown, $2.25.

The St. Louis Gas Troubles.—ST. LOUIS, Mo., Jan. 11.—The special committee appointed some time ago by the Municipal Assembly to confer with a similar committee of the St. Louis Gas-Light Company, with a view to ascertain whether a compromise of the litigation existing between the city and the gas company can be made, met this afternoon, and the gas company submitted a proposition in effect that it would release the city of all unpaid claims for gas, amounting to about $826,000, sell gas to consumers for $2.25 per thousand, with the usual discount for the prompt payment of bills, pay the cost of the suit and counsel fees, and release the city from all damages because of said suit, the city to secure a decree of the Supreme Court, where the suit is now pending, reversing the decree of the Circuit Court, and to turn over to the Gas-Light Company all the works, records, and property of all kinds now held by the city, and to execute a full discharge of the claims of the city against the gas company to date on account of said litigation of property. The proposition was received by the committee, and will be considered by them, and probably a report be made to the Municipal Assembly giving their views of it.

The Delaware (O.) Gas Co. has reduced the price of gas to $2 per 1000 feet.

Lighting Philadelphia for 1878.—The appropriations for lighting the city of Philadelphia during the year 1878 amounted to $318,200, on which warrants were actually countersigned for 314,129.71.

San Francisco Gas Co.—The stock of this company is still declining, recent sales of some 700 shares having been made at $75 per share. The *Commercial Herald* says of this : "Since last report, the electric light agitation has caused some timid holders to throw their stock on the market. It is a noteworthy fact, however, that the largest inside holders, and who are the best posted on the electric light, are the buyers."

The following list of Companies in New York and vicinity is corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas Stocks, No. 30 Broad street, New York:

COMPANIES IN NEW YORK AND VICINITY.	Capital Stock.	Par.	DIVIDENDS. Rate per ann.	Am. of last.	Date of last.	QUOTATI'NS Bid.	As'd.
	$		P. ct.				
Mutual, N. Y.	5,000,000	$100	6	1½	Oct., '78	60	65
" Bonds	90,000	1,000	6	3½	Aug., '78	97	102
N. York "	4,000,000	.....	8	4	May, '78	82½	86
Metrop. "	2,500,000	100	10	5	Aug., '78	100	110
" Certfs.	1,000,000	.....	7	3½	" '78	95	100
Harlem "	1,850,000	50	6	3	Feb., '78	...	35
Manhat. "	4,000,000	50	....‡	5	May '78	155	165
Brooklyn, Bkln.	2,000,000	50	15	5	Jan., '79	123	130
Nassau	1,000,000	25	....‡	3	July, '78	50	60
" Certfs.	700,000	1,000	7	3½	May, '78	80	90
People's	1,000,000	10	....‡	3½	Jan., '76	16	25
" Certfs.	300,000	1,000	7	3½	July, '78	70	75
" Bonds	325,000	.....	7	3½	May, '78	90	96½
Metrop. "	1,000,000	100	5	2½	May, '78	50	60
W'msb'g "	1,000,000	50	8	1½	July, '78	75	85
" Certfs.	1,000,000	.....	7	3½	July, '78	85	95
Citizens'	1,200,000	20	....‡	3	July, '78	50	60
" Certfs.	320,000	1,000	7	3½	Apr '78	85	95
J. C., N. J.	750,000	20	10	7½	Jan., '79	120	135
Municipal, N. Y.	466,000	50	.....	.....	.....	100	110
" Bonds	750,000	.....	.....	.....	.....	.....	...
.....	.....	.....	.....	.....	.....	.....	...

Copper Stocks.

Reported by WILSON W. FAY & Co., Brokers in Mining and Miscellaneous Stocks, Room 7, Traveller Building, 31 State street.

BOSTON, Thursday, Jan. 16, 1879.

The active stocks on the list of "coppers" or mining stocks is getting so small that there can not be a great amount of transactions expected from them, and, every thing considered, we have had a very fair market during the week, the chief interest being centered in Calumet and Hecla, which advanced rapidly from 173½, to which it had declined owing to the general dullness of the market, and sold up to 176, and closes firm at 176@176½.

Central is dull, there being no disposition to trade in it.

Copper Falls is quiet, at 1@1¼, but there is evidently some point being worked in it which the outsiders are at a loss to understand, but, according to all signs and precedents, it ought to have a rise.

Franklin is steady at 4½@5.

Osceola is dull at 10@11, and no sales.

Pewabic is as quiet as usual, there being no trade in it, although there are parties who are evidently willing to pay $1 for it, while the holders think it is worth more, and therefore hold on to it.

Quincy is weak, having fallen off to 12½ and closes at 12@12½.

Ridge is quiet, having fallen off somewhat, and closing steady at 1⅛@1¼.

Duncan has not been as active as usual, there being sales at 3½ and 3¾ and closing firm at 3½@3¾.

International sold up again to 50c. and back to 37½, and closes weak at 35@37½.

Silver Islet is steady at 40¾@41, having sold down to 40 and strengthening again to the above figures. It is rumored on the street that strong buyers are investing in it.

Gold and Silver Stocks.

NEW YORK, Friday Evening, Jan. 17, 1879.

The business of the Mining Exchange has not sympathized with the very active and buoyant market in railroad shares, nor even with that of the San Francisco market, which has shown considerable strength during the week.

A fair business has been done in San Francisco stocks in this market. We note sales as follows at the Mining Exchange : Belcher, 20 shares, at $4 ; Bodie, 155, at $10@$9 ; California, 365, at $11½@$10 ; Consolidated Virginia, 621, at $10@$8 ; Eureka Consolidated, 10, at $30½ ; Grand Prize, 5, at $6 ; Independence, 1060, at $1.05@$1.25 ; Leeds, 155, at $1.10 ; Bullion, 5, at $8 ; Consolidated Imperial, 301, at 75c. @$1.05 ; Hussey, 500, at 25@35c. ; Julia, 25, at $4 @$3½ ; Leviathan, 100, at 45c. ; Navajo, 550, at 45c. ; Tip-Top, 100, at $1.

In the important stocks of the regular list Hukill has been quite active, the sales amounting to 1545 shares, at $3.30@$3. According to the reports of the local press, this mine is being put into such condition, and such preparations are being made for handling the ores, as will result in earnings quite satisfactory to the stockholders. Plumas has been dealt in to the extent of 1475 shares, at $3.45@$3.55. We note further sales as follows : Findley, 100, at 58c. ; Moose, 100, at $4.30 ; New York and Colorado, 200, at $1.55@$1.25 ; Ontario, 70, at $39 ; King's Mountain, 400, at $1½ ; Trio, 1120, at 45@46c. ; Sutro Tunnel, 500, at $2½@$3.

Of the fancies, Bertha & Edith has been the favorite, the sales amountiag to 74,500 shares, at 10c.@ 13c. ; American Flag, with straggling transactions, records sales of 1500 shares, at 19@20c. ; Dahlonega, with two days as blanks, records 8700 shares, at 14@13c. The sales of Gold Placer aggregate 23,820 shares, at 15@20c. ; of Lacrosse, 16,300, at 29@25c.

Findley has declared a dividend of 1 per cent, payable on the 22d instant. The earnings were curtailed in December by the unusually cold weather for that section of the country.

The Homestake mine, which is under the same management as the Ontario, has declared its first monthly dividend of thirty cents per share, payable at Wells, Fargo & Co.'s on the 25th instant.

The trustees of the Penobscot Company, although having a cash balance here of $45,000, did not declare a dividend. The earnings for December were $20,000, and expenses $8000. The stockholders have become a little anxious for returns. The management, however, with the severe weather, have been disappointed in their ability to do the amount of work counted upon when operations began. Capt. Frue, under date of January 4th, wrote :

"I have been sampling and vanning rocks all day from the mine. The result of some has astonished me. I believe we have opened into ore on the 100, going east, which will run from $100 to $2000 per ton. The samples from several other points in the mine show well ; in fact, the mine is looking well in all points."

Under date of January 15th, he telegraphed : "Penobscot looking good, rich ore, gold showing plainly on the vein bottom of shaft. All openings prospect well; considerable $2000 ore in quantity ; expressed some to New York ; increasing stamp mill and arastra capacity."

SAN FRANCISCO MINING STOCK QUOTATIONS.

Daily Range of Prices for the Week.

NAME OF COMPANY	CLOSING QUOTATIONS Jan. 10.	Jan. 11.	Jan. 13.	Jan. 14.	Jan. 15.	Jan. 16.	Opening. Jan. 17.
Alpha	12⅞	12¾	12⅝	12¼	12⅞	12¾	14⅛
Alta	7	6¾	7	7¾	7⅞	7⅞	7½
Argenta	....	....	....	....	....	....	....
Bechtel	....	....	....	....	....	....	....
Belcher	4½	4⅞	4¾	4½	4⅝	4⅝	5¼
Belle Isle	....	....	....	....	....	....	....
Benton	....	....	....	....	....	....	....
Best & Bel.	22	22	22⅝	23¾	24¼	21¼	22¾
BlackHawk	....	....	....	....	....	....	....
Bodie	9¼	9⅛	8½	8½	9	8⅜	....
Booker	....	....	....	....	....	....	....
Bullion	7⅛	7½	7⅝	7⅞	8¼	8⅜	9¼
Bulwer	....	....	....	....	....	....	....
Caledonia	2¾	3¼	3	3¼	3⅛	3	3¼
California	10½	10½	10¾	11	11¼	9½	9¾
Chollar-Pot	46¼	45½	46½	46½	53	49½	52½
Confidence	....	....	....	....	....	....	....
Con. Imp	....	....	....	....	....	....	1.00
Con.Va.	7⅝	7⅝	7⅞	8⅛	8½	8⅛	8¾
Crown P'int	4¼	4¼	5⅜	5⅜	5¾	5⅜	6¾
Endowm'nt	....	....	....	....	....	....	....
Eureka Con	31	31	26¾	27¼	28½	29	....
Exchequer	5⅞	5¼	5	5¼	5¾	5½	6½
Goodshaw	....	....	....	....	....	....	....
Gould &Cur	12½	12½	14	15¾	16⅜	14⅛	14⅝
Grand Prize	5½	4⅞	5	4½	4⅛	4	....
Hale & Nor.	14½	15	14⅞	16½	19½	17	18⅞
Hamburg	....	....	....	....	....	....	....
Homestake	....	....	....	....	....	....	....
Hussey	....	....	....	....	....	....	....
Indep'd'nce	....	....	....	....	....	....	....
Jackson	....	....	....	....	....	....	....
Julia Con.	3½	3⅜	3⅜	3½	4	3¾	4
Justice	4	4	4	4⅜	4½	4½	5¼
Kentuck	....	....	....	....	5¾	7	7
Kossuth	....	....	....	....	....	....	....
Leopard	....	....	....	....	....	....	....
Leviathan	....	....	....	....	....	....	....
Manhattan	....	....	....	....	....	....	....
McClinton	....	....	....	....	....	....	....
MeadowVal	....	....	....	....	....	....	....
Mexican	30¾	31	31	32¾	34	33¼	33½
Mono	....	....	....	....	....	....	....
Navajo	....	....	....	....	....	....	....
North. Belle	8	8⅛	8¼	8	8	7½	....
Ophir	31½	32¾	33½	34	36¼	34¾	35½
Orig. K'ys'e	....	....	....	....	....	....	....
Overman	10	11	11	11½	11⅞	11⅛	....
P. Sheridan	....	....	....	....	....	....	....
Ray. & Ely.	7½	7⅔	7½	7	8½	7¾	....
Richer	....	....	....	....	....	....	....
Savage	13¾	13¼	13½	14⅜	16¼	15	15⅜
Scorpion	....	....	....	....	1½	....	....
Seg.Belcher	....	....	....	....	21	....	20
Sierra Nev.	43	44	48¼	53½	54½	49	49½
Silver Hill	....	....	....	....	....	....	1¾
Silver King	....	....	....	....	....	....	....
Summit	....	....	....	....	....	....	....
Tip Top	....	....	....	....	....	....	....
Union Con.	56¾	58	58½	61	63	60½	60½
Utah	....	....	....	....	21¼	18½	18½
Ward	....	....	....	....	....	....	....
WashoeCon	....	....	....	....	....	....	....
Wells Fargo	....	....	....	....	....	....	....
Yel. Jacket	19½	20	18⅜	18¾	20½	20	22
.....	....	....	....	....	....	....	....
.....	....	....	....	....	....	....	....
.....	....	....	....	....	....	....	....
.....	....	....	....	....	....	....	....

REVIEW OF THE SAN FRANCISCO MARKET.

Quotations of the shares of the Comstock mines have taken a decidedly upward turn, and many of the stocks open to-day at nearly the best quotations of the week. On the 15th inst., prices were generally at their highest ; yesterday the market receded considerably, but the opening prices to-day mark an improvement. No doubt the discovery of a new orebody in any of the lower levels, now being so industriously explored, would send stocks "booming" again.

Alpha opens at $14¼—the best price of the week, and the best for a long time past. The joint east-drift on the 2400-foot level of this mine has advanced 160 feet, face in hard-blasting green porphyry.

Alta opens at nearly the best price of the week, viz., $7½, against $6½ a week ago. Good progress is being made in all parts of this mine.

Belcher shows an improvement of $1 per share, opening at decidedly the best price of the week. This mine has now attained the lowest depth on the Comstock. The north incline is 44 feet below the 2500-foot level.

A new station is being opened at the 2560 level, from which, as soon as completed, prospecting drifts will be started and sinking the main incline continued. This company is now spending about $14,000 per month on labor account.

Best & Belcher advanced on the 15th inst. to $24¼, but opens to-day about $2 per share below this price. At the new shaft in this mine the flow of water is so strong that it is handled with difficulty ; therefore, but little progress is made in sinking.

Belle Isle.—Recent sales of this stock have been made in San Francisco at 20c. per share. A recent mill test of 19 tons of ore from this mine averaged $188.47 per ton.

Bulwer has been selling in San Francisco at from $14 to $15 per share. This company is shipping its ore to the Bodie mill. The ledge in the south drift, 380-foot level of this mine is reported as two feet in width, and very good ore.

Bullion opens at a marked advance. The improvement for the week shows an appreciation of nearly one third in the market value of the stock. The absence of water in the lower levels of this mine is of considerable importance toward rapid progress in the developments. The main incline is down 212 feet on the slope below the 2050 level, the bottom in quartz and porphyry mixed.

Bodie is unchanged as compared with our last, closing yesterday, however, at the lowest price of the week. This company is making regular shipments of bullion, with prospects for an uninterrupted continuation of the same.

The *Commercial Herald* of the 9th inst. says of the market : "The business at the Stock Boards has been quite light during the week under review, and the operations have been restricted to a greatly reduced list of stocks. However, prices have not fallen off as might have been expected under the circumstances. At present, nothing presents itself upon which to build a market, and we can see nothing favorable to a speedy improvement. It has a very discouraging aspect, with the hopeful prediction that in spring every thing will be booming again. Aside from the stock market here, we shall look for very favorable results from outside mining districts during the past year, in which the Eureka district will undoubtedly take the lead. Its large bullion product is already attracting marked attention, and vigorous work is being done in many very promising mines in that locality."